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MAR 25 1915

VOL. XIII., No. 1.

JANUARY 1915.

# Review

## Neurology & Psychiatry

(Founded by the late Dr Alexander Bruce)

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*Issued monthly, price 25s.; \$6.25; 25 M.; 30 fr.; per annum, post free*

EDINBURGH

**OTTO SCHULZE & COMPANY**

20 SOUTH FREDERICK STREET

G. E. STECHERT & CO., 151 TO 155 WEST 25TH STREET, NEW YORK, U.S.A.

1915



**THE REVIEW OF NEUROLOGY AND PSYCHIATRY** contains original articles, as well as digests, abstracts, reviews and bibliography of the most recent neurological and psychiatric literature.

Each Contributor of original articles will receive fifty reprints of his paper.

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All editorial communications should be addressed to the Editor, 8 Ainslie Place, Edinburgh.

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**REVIEW OF  
NEUROLOGY AND PSYCHIATRY**





# REVIEW

OF

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(FOUNDED BY THE LATE DR ALEXANDER BRUCE)

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VOLUME XIII.



EDINBURGH  
**OTTO SCHULZE & COMPANY**  
20 SOUTH FREDERICK STREET

1916

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V. 13

1913

PRINTED AT  
THE DARIEN PRESS  
EDINBURGH

THE DARIEN PRESS  
EDINBURGH

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largest specimens of this cell are found. But although I examined some seventy-four hospital cases, only fifty-two on microscopical inspection were found to be from the desired region.

Pieces of cerebellar cortex from the hospital series were taken from the left lobe, posterior border, in a sagittal direction.

*Technique.*—The tissues were fixed in absolute alcohol, embedded in paraffin, and sections fixed to the slide by Gulland's method were stained with Unna's polychrome blue.

I began by undertaking micrometrical observations, but soon abandoned this line, feeling that the results were untrustworthy, owing to the uncertainty as to the precise orientation of the pieces.

I will briefly describe the normal appearance of a Betz cell after preparation as described.

It is usually angular in shape and somewhat narrow in proportion to its length, giving off short lateral or basal branches (dendrites) which contain well-marked linear tigroid material, staining a dark blue; the cell body passes insensibly in its upper aspect into a stout tapering apical branch, which also shows very definite tigroid spindles. The tigroid present in the cell body is in the form of bulky masses, and although more regularly arranged at the periphery, yet, even in the centre of the cell body, the individual lumps are large and often cubical. The ground substance between the flakes does not stain, and is colourless.

The nucleus is oval and plump, occupying roughly about a quarter of the cell, and situated more or less in its centre; it is bordered by a distinct membrane, which in sections appears as a dark line. It is clear—that is, its contents are sparsely granular, the granules lying in a perfectly colourless matrix.

The nucleolus is round and very deeply stained, and not more than  $4\ \mu$  in diameter; it sometimes shows a pale endonucleolus.

Pigment (yellow) may or may not be present; it usually lies at the base of the cell, or one deposit at the base and another at the apex.

The axis cylinder, as a rule, is not seen. When present it passes from the base of the cell from a little eminence known as the axis cylinder hillock; both it and the hillock are without tigroid. At its point of emergence from the cell, and for a little distance therefrom, it is of stout calibre, but shortly thins down to become an exceedingly slender branch.

### COMPARISON OF HISTOLOGICAL APPEARANCES 3

The form which I term immature Betz cells presents the following appearances:—

This form corresponds exactly to an early condition of the change known as “*réaction à distance*,” more conveniently renamed by Adolf Meyer “axonal change.”

The cell is usually large and rounded, giving off normal-looking dendrites, but the interior of the body is pale and occupied by rather fine grains of tigroid. The nucleus is displaced towards the apex or one side of the cell body. It is either large and clear, with a natural bordering membrane, or larger than normal and nearly empty, so that it has been aptly termed “bladder-like.”

This description applies to the pure form, but very often other pathological changes are added, or the cell may seem to pass into an advanced stage of axonal reaction, in which case it may be shrunken with a pale vitreous centre, bordered by a thin dark rim, representing all that remains of the tigroid, and with very often, down one side, a column of dark yellowish pigment, whilst the nucleus becomes small, pinched in, lies against one side of the body, and may be densely granular or dark, and homogeneously stained; or, if large and clear, it may partially obtrude from the cell body, and show no distinct bordering membrane.

This advanced form is especially characteristic of certain cases of dementia præcox—those of the katatonic variety, and it may be urged that it is the result of some toxic cause. Whilst probably a toxic factor may be present, I consider, from the evidence given later on, that even in those cases the Betz cells are originally in a defective condition of development, showing the characters I have termed “immature,” and hence they are especially liable to undergo further degenerative changes.

*Significance.*—It is usual to associate this form of cell with injury or disease of its axon, but from my experience, extending over many years, and embracing the examination of many hundreds of brains, it became evident that only in a very few cases would such an explanation be at all adequate.

In the first place, although sections of the cord containing the axons of the altered cells were examined, and likewise other regions through which they passed, it was very rare to find any evidence of Marchi degeneration in these structures.

Secondly, it was noted that in a very large proportion of all the cases the cells were in what would represent a very early

stage of axonal reaction, although clinically many of the cases were of long standing. If an axonal change was to account for the appearance, almost certainly a very much larger number would have shown more advanced stages. We can scarcely imagine that nearly all the cases died just when the reaction was beginning.

On studying the incidence of these cells in different classes or varieties of insanity, some light is, I think, thrown on their significance. Thus, the congenitally defective, and cases of dementia præcox, yield the highest percentage, and general paralytics, that class which is the best endowed physically and mentally, the lowest.

Lugaro (*Riv. Speriment. di Fren.*, 1902) states that types of cell corresponding to the phase of reaction and repair (axonal reaction) are found in certain stages of phylogenetic development, and that the slighter form of reaction is normal in some of the nerve cells of the lower vertebrates.

Van Biervliet pointed out the resemblance of the reacting cell to an embryonic nerve cell, and I can corroborate this statement by my own observations, for in the new-born rat I have been struck by the predominance of two of its most striking features characterising the young nerve cells of the cerebral cortex. I refer to the large bladder-like nucleus and its peripheral situation.

It was from a consideration of these facts that I was led to conclude that the form of nerve cell I am describing was in reality not a pathological condition, but an anomaly indicating a defectively developed, and therefore probably a cell of deficient durability.

In order to make a trustworthy comparison, some standard had to be found as to what number or proportion of immature cells in one section constituted a positive case.

For many years past I have been in the habit of calling a case positive in which the sections showed six or more axonal-like cells with nucleus present, in the plane of section.

By this rule I obtained the following proportions among insane cases :—

In all varieties from 35 to 40 per cent. showed the cell change.

That is to say, in from 35 to 40 per cent. more than six cells in a section from each case were of the type.

## COMPARISON OF HISTOLOGICAL APPEARANCES 5

It is least prevalent in general paralysis, among which cases only some 20 per cent. gave a positive result.

It is most prevalent among cases of dementia præcox, 80 to 90 per cent.

Epileptics, with congenital defect, 70 per cent.

Congenital defectives, without epilepsy, about 60 per cent.

As exception might be taken to my standard of six, I have in the cases made use of for this paper adopted another, viz.—I have counted all the Betz cells showing a nucleus in a section, and then all with a nucleus showing axonal characters, and given the result in percentages, regarding those of 50 per cent. or over as positive.

Either method might be open to cavil, but probably the sources of error in both series being common to each will counteract each other. I am sure that anyone examining both series will entertain no doubt that the axonal form is vastly more common in the asylum than in the hospital cases; but in order to express the relative frequency of this form of cell in either series, we must have some common standard, and as the results by either of my standards are substantially the same, it is immaterial which we choose. The method of percentages seems the more exact, consequently I have chosen it.

I must now refer in detail to my results (see Table I.). The sexes are differentiated, and in both series the axonal cell is more common in the females.

The ages are fairly concordant.

The causes of death were very diverse and are not given, as they seem to have no bearing on the form of cell.

Taking first the women—we find that among asylum cases this form of cell characterises the brain in 45 per cent., in hospital cases in only 15 per cent.

In the males it occurs respectively in asylum and hospital cases in 36 per cent. and 7 per cent.

In both sexes together the percentage of asylum cases was 40 per cent., of hospital cases 10 per cent.

No doubt the comparative lowness in male asylum cases is largely due to the number of general paralytics included among them.

But notice that not only is it rarer to meet with these cells in hospital cases, but also that when we do find them they do not

as a rule dominate in the proportion that they are apt to in asylum cases. This is shown by comparing the number in each series where practically all the cells seen in a section showed this feature, viz.:—hospital cases, two; asylum, thirteen.

Table No. I. gives the full particulars of two series of cases showing this form of cell.

Just as in the asylum cases, so in the hospital one finds that it is the small nerve cells of the second and outer third layer (Meynert's classification) which appear in the vast majority of instances to be the most affected, or at all events the most altered from what is described as their normal aspect. They are generally represented by a small remnant or several detached remnants of cytoplasm around a small, dark, homogeneously stained nucleus lying in a capacious space, without definite shape and branches.

This appearance of degeneration may in many cases, or to a great extent, be due to an artifact resulting from the deleterious action of powerful fixatives on very delicate structures, but possibly not altogether, because the spindle cells of the innermost layer, which are not much larger than some of the others, most frequently appear the most intact. This may, however, be because if, as is commonly supposed, they are the oldest cortical elements phylogenetically, they would be the most organised, and therefore less prone to fall to pieces during fixation.

*Halo Degeneration of Nerve Cells.*—A form of nerve cell degeneration has been described by Mondio (*Annali di Neurologia*, 1905) as specially characteristic of dementia præcox. The cell is rounded or stunted, the cytoplasm is in a more or less loose, crumbling state, leaving (and this is the characteristic point) a clear space, or "halo," of varying width all round the nucleus, which may be in all conditions of change, varying from a large, clear, bladder-like body to a small, solid, darkly-stained one, representing the homogeneous degeneration described by Sarbo.

In the second layer and outermost part of the third (Meynert's classification) one frequently meets with a form of this degeneration in which the "halo" is only partial, so much of the cytoplasm having been destroyed that only a small cup-shaped portion remains at the lower end of the cell, above which, separated by a clear space, lies the nucleus, forming a sort of "cup and ball" arrangement.

Sometimes, especially in the outer small cells of the second layer, a dark solid nucleus lies apparently unattached in a space

which is bordered by a thin ring of granules lying contiguous to the matrix, and which represents all that remains of the cell body.

This form of degeneration I have been accustomed to look upon as one indicating deficient durability in the make up of the cell, in which it tends to decay comparatively early in life, and I find that it is not only very frequently met with in cases of dementia præcox, but also, as one would expect on the above hypothesis, in cases of congenital defect. So that it is of considerable interest to compare the incidence of this form of change in hospital and asylum cases, but owing to the great multitude of nerve cells it is difficult to institute a trustworthy standard of comparison. One can only note that more or less of the cells show this character. Very few sections fail to show one or two if carefully searched, but I have only counted as positive the sections showing an undue proportion of this form, where they leap to the eye without any search.

In the hospital series they are noted as characterising the section in twelve males out of forty-three, or 28 per cent. The laminal distribution was as follows:—Occurring with great frequency nine times in the second layer, eight times in the outer third layer, eight times in the lower third (total in third, 9), and four times in the spindle layer.

In the asylum series they characterised the sections in ten cases (33 per cent.) (and including twelve general paralytics, giving a total of forty-two cases, a percentage of 24 per cent.).

The Laminal Distribution.—Five times in the second layer, three times in the upper third, six times in the lower third (total seven times), and three times in the spindle layer.

Amongst the females in the hospital series they characterised the section in five cases, or 17 per cent., distributed as follows:—Three times in the second layer, three times in the outer third, four times in the lower third (total in third, 5), and twice in the spindle layer.

Amongst the females of the asylum series they occurred four times, or 13 per cent., distributed as follows:—Three times in the second layer, twice in the upper third, once in the lower third (total in third, 3), and twice in the spindles.

Table II. shows at a glance the above-noted features.

The view that these cells represent elements defectively constructed, and therefore of deficient durability, may be well founded,

but the evidence thus obtained does not from a numerical point of view appear to give it much support. But it must be noted that only one region, the top of the ascending frontal, has been contrasted in the two series, and this form of degeneration is much more common among the nerve cells of the prefrontal region, a region probably in which the nerve elements are more recently evolved phylogenetically, and therefore presumably least organised.

The distribution of these degenerated cells among the laminae suggests the view here promulgated, for it is among the supra-granular elements that we are especially prone to meet with the "halo" form in both series. That is to say, it is seen in those cells last to be evolved, and therefore least organised, and those probably concerned with our highest intellectual functions.

*Subcortical Nerve Cells.*—The presence of nerve cells in the white matter subjacent to the cortex was first, I believe, drawn attention to as characterising epileptics' brains by Roncoroni, and in the *Journal of Mental Diseases*, 1907, I corroborated this point, having found in a series of brains of epileptic patients dying in the asylum the presence of large numbers, in no less than 75 per cent.

The nervous nature of these cells is shown *par excellence* by the presence of characteristic tigroid, secondarily by the characters of the nucleus. I do not recollect ever seeing an axis cylinder process springing from one.

One rarely if ever examines a section from the top of the ascending frontal convolution without seeing some, but in the prefrontal region they are very rarely seen.

For the purpose of this paper it has been only when they have been present in large numbers that notice has been taken of them.

Amongst the males from the hospital cases they were noted 7 per cent.

"	"	asylum	"	19	"
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Amongst the females from the hospital cases they were noted 3 "

"	"	asylum	"	10	"
---	---	--------	---	----	---

They occurred in eight males and three females in the asylum series. Three were congenitally defective with epilepsy, one was congenitally defective without epilepsy, and four were cases of dementia præcox (hebephrenic), and one epileptic insanity—a suggestive list.



## COMPARISON OF HISTOLOGICAL APPEARANCES 9

In the cow and cat they form, both by their number and size, very prominent features, remaining permanently throughout life. In very young human subjects they are fairly numerous, but tend to disappear with the approach of the subject to maturity. From these considerations I have regarded their presence in large numbers as an evidence of defect of development—as, that is to say, an anomaly.

However this may be, it seems evident from my figures that they are far more characteristic of the brains of the insane than of those dying in general hospitals.

I append a list of the insane cases which showed this predominance, and, as will be seen, it consists chiefly of dementia præcox and epilepsy.

					Males.	Females.
Congenital with epilepsy	-	-	-	-	3	...
„ without „	-	-	-	-	1	...
Epileptic insanity	-	-	-	-	1	...
Dementia præcox	-	-	-	-	1	3
Korsakow's disease	-	-	-	-	1	...
Acute mania	-	-	-	-	1	...

*Pigmentation of the Betz Cells.*—Yellow pigment occurs normally in these cells to a small amount, and is wont to increase with advancing age. According to Bevan Lewis, “it is an invariable witness to bygone functional hyperactivity.”

Marinesco suggests that it is merely an evidence of senile involution, or of a loss of vitality and functional energy in the cell. But by this view in many cases its presence is not easily accounted for. For example, the nerve cells of the sympathetic ganglia, irrespective of age, are always deeply pigmented. Quite 90 per cent. of them, especially the smaller ones, are crowded with coarse brown pigment, which stains black by Cajal's silver method. The pigment is not confined to the cell body, but also extends into the dendrites. But the yellow pigment of the Betz cells does not stain at all by Cajal's method, so that in the two cases the pigment is of a different nature.

Buscaino (*Riv. di Patol. Nerv e Ment.*, 1913, p. 673) asserts that it is of a lipoid nature, consisting essentially of saturated phosphatids and some other acetone insoluble lipoids.

In the insane, according to my observations, it occurs in excess

in nearly 70 per cent., but although in the series of insane cases here made use of it was found more frequently than in the hospital series, the percentage was not nearly so high as that just given. In this series I only noted cases in which the cells showed a very large excess of pigment.

Males	-	-	Hospital cases,	18 per cent.	Asylum,	24 per cent.
Females	-	-	"	23 "	"	30 "

The commonest site in the body of the cell for the pigment to lie is at its base, but sometimes there will be two deposits, one near the apex and one basal. In certain axonal cells it lies as a broad band all down one side of the body.

*Glios.*—Glia cells form a normal part of the structure of the matrix of the nervous system, and are always present both in the zonal and white matter of the cerebrum, and the molecular layer and white matter of the cerebellum; as well as in other parts, but by the ordinary routine methods employed in staining, or at all events by that one which I have employed, only the nucleus of the glia cell appears under normal conditions, and if the cell body and its branches become visible it is owing to proliferation from some pathological process.

Glia is probably of a two-fold origin; one kind is derived from epiblastic tissue, and the other probably from mesoblastic. Only the former, sometimes termed neuroglia, is treated of here.

I might here add that, except in a very few cases of either series, the amount of gliosis noted has been very slight.

In the zonal layer of the cerebral cortex the cells, as a rule, are very small, and their body ill defined, although sometimes the sharply stained fibrillar branches give a fair definition to its boundaries. The nucleus is generally very darkly stained, shrunken, angular, or irregular in outline, and when the cell body is of any size it is usually placed eccentrically. The gliosis in the molecular layer of the cerebellum takes another form. The cell body generally lies in the vicinity of the Purkinje cell, and sends up quite or nearly to the surface straight, clean-cut fibrils known as Bergmann's fibres. The cells in the white matter of either cerebrum or cerebellum are similar. The body is apt to be larger than that of the zonal cell, of a smoky appearance, and gives off long wavy branches, some of which pass towards vessels and become attached to the vessel wall. The nucleus is often plump

## COMPARISON OF HISTOLOGICAL APPEARANCES 11

with a thin membrane, and only very sparse granular contents; in other cases, possibly in connection with age, it appears like the nucleus in the cell of the zonal layer, small, shrunken, very dark and dense, or nearly black throughout.

Zonal gliosis occurs more frequently in the hospital cases of both sexes; but this preponderance in the females is very slight. If we exclude the general paralytics (twelve in number) from the asylum males, then it will be found that the preponderance of gliosis in hospital male cases is very considerable. Similarly, as regards the cerebellum there was practically no difference in the incidence of gliosis between the two series, whereas among men (especially if we exclude general paralytics) the preponderance on the side of hospital cases is, as in the cerebrum, very considerable.

The accompanying table puts these results, expressed in percentages, into convenient form for contrasting the two series. (See also Table III.)

	Cerebrum.				Cerebellum.			
	Zonal.		White Matter.		Molecular.		White Matter.	
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
Hospital cases	37	47	14	17	16	10	23	23
Asylum cases, including g.p.	35	30	21	17	7	11	21	20
Asylum cases (males), excluding g.p.	23	...	3	...	0	...	10	...

*Colloid Bodies.*—Structureless spheres, varying in diameter from two up to ten or more microns, are commonly seen in certain sites of the nervous system. They are degenerating products, and have been supposed to be droplets of myelin; against this idea is the fact that they do not stain like myelin when treated with osmic acid, but very probably they are degenerated forms of myelin. Their derivation from myelin receives a certain measure of support from the fact that the sites where they are usually found are peculiarly those characterised by abundance of myelin. These are the zonal layer of the cortex and the molecular layer of the cerebellum, and the white matter, and in the former they are especially apt to lie within the sclerosed ring which so often, in pathological conditions, borders the zonal layer. In the white

matter they are particularly common around vessels, but within the grey matter (apart from the zonal layer) they are comparatively rarely seen.

With polychrome blue they stain sometimes very faintly, sometimes very deeply; at times the centre takes a different tint to the circumferential area, generally a pink colour. Not uncommonly, round the circumference, they show a number of short radial fractures.

The preponderance of these pathological products in the hospital series is even more marked than the preponderance of gliosis. (See Table annexed, and Table III.)

Results Expressed as Percentages.	Cerebrum.				Cerebellum.			
	Zonal.		White.		Molecular.		White.	
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
Hospital series . .	14	30	14	10	35	27	2	3
Asylum series . .	18	13	2	3	7	11	2	4

*Blood Vessels.*—The blood vessels were examined on the following points:—(a) Structural alterations of walls, hyaline thickening, &c.; (b) increase of nuclei in the perivascular or periadventitial space; (c) pigment in the walls.

(a) Vessels of the hospital series, compared with a series of very similar ages dying in asylums, showed considerably more often pathological changes, and this applies to both sexes.

(b) If general paralysis is excluded, all these changes occur more frequently in the hospital series, and when this disease is included, the only way it affects the results is in the greater incidence of periadventitial infiltration, which is such a marked feature in these cases.

(c) The pigment noted in the vessel walls varies in colour from pale yellow up to very dark green; it is vitreous-looking, and is quite a common feature in the hospital brains, chiefly deposited in the medullary vessels. It was never recorded in the cerebellum in either the hospital or asylum series. (The table gives the results expressed as percentages.)

# COMPARISON OF HISTOLOGICAL APPEARANCES 13

		Structural Alterations in Walls, Generally thickening only.		Increase of Nuclei or Cells in Perivas- cular Space.		Pigment in Vessel Walls.	
		Cerebrum.	Cerebellum.	Cerebrum.	Cerebellum.	Cerebrum.	Cerebellum.
Hospital series	Males -	50	21	32	9	32	...
Asylum „	Males -	30	9	40 <sup>1</sup>	4	14	...
Hospital „	Females	27	10	23	...	33	...
Asylum „	Females	7	...	18	...	18	...

*Cerebellum.*—Gliosis, colloid degeneration, and vascular changes have been already discussed. Here I shall only briefly refer to the depth of staining of the Purkinje cells.

It is customary to associate hyperchromatic nerve cells with cells in which nervous energy is present and acting vigorously—the condition of cell styled by Nissl pyknomorphic. Crile also lays considerable stress on this feature in his work on anoci-association.

Very pale cells, on the other hand, are taken as representing more or less exhausted cells.

With these introductory remarks I will show the results obtained in my two series:—

		Hospital.	Asylum.
Pyknomorphic cells, males		49 per cent.	10 per cent.
„ „ females		43 „	23 „
Pale cells - „ males		10 „	35 „
„ - „ females		30 „	40 „

One or two other interesting points may be briefly referred to.

In one case, G. 521, a minute new growth was found on microscopical examination in the molecular layer: it showed appearances suggesting a small gumma.

In one case, L. 341, a female, aged 48, with granular kidneys, over a small area, chiefly in the granular layer of the cerebellum, all the vessels were vitreous—that is, their walls were occupied by small glassy particles, some round, but others angular, with clean fractures. I drew attention to a similar lesion in my paper on the “Pathological Anatomy and Pathology of Epilepsy” (*Jour. Ment. Science*, 1907), and to Professor Picks’ association of a similar condition with tetany (*Neurolog. Centralblatt*, 1903). Since then I have met with five further instances, usually in epileptics,

<sup>1</sup> Or, excluding g.p. only, 13 per cent.

and in one case of general paralysis. The lesion may involve the vessels of cerebrum or cerebellum.

Small areas showing atrophied foliæ, with gliosis and thinning of the molecular layer, disappearance of the Purkinje cells (in the atrophied area), and diminution in the number of granules were found once in the males, G. 208, and among the insane series in one male and one female.

The section of G. 574 presented all the typical appearances of a case of general paralysis of the insane.

#### SUMMARY.

To briefly recapitulate the chief results of this study—it appears that the strictly pathological changes—gliosis, colloid degeneration and especially vessel changes—predominate in the hospital series.

Of the three changes which I consider, for reasons given in the paper, inherent anomalous conditions of nervous structure, at least two preponderated largely in the asylum cases. These two are (*a*) axonal-like Betz cells, (*b*) presence of subcortical nerve cells.

The third change is “halo degeneration,” and in this the evidence is not decisive. All it absolutely allows us to affirm is (1) that it occurs most commonly among the supra-granular cells, and of these it is chiefly the small outermost-lying elements which are most affected. (2) That in the insane series it is much more common in cases of dementia præcox and congenital mental defect. Probably, if the comparison had extended over a larger area of the cerebrum so as to include the higher associational regions, it would be found that the “halo cell” is more common in these regions in the insane; at all events it is found more commonly in the prefrontal area in insane cases than in the ascending frontal. Time and opportunity have not allowed me to carry out such an extended comparative study, although I consider this would be well worth making, and would, I believe, result in valuable information towards a theory of insanity.

But even in the restricted area to which I have been obliged to limit myself, I consider the results are sufficiently interesting to place on record.

I have to thank Dr H. M. Turnbull, Pathologist at the London Hospital, and Dr H. French of Guy's Hospital, for their kind assistance in procuring for me the necessary material, and for the large amount of trouble they have taken in supplying me with particulars of the cases.

TABLE I.—FEMALES.

HOSPITAL SERIES.						ASYLUM SERIES.					
Year and P. M. Number.	Age.	No. of Betz Cells Counted.	No. Showing Axonal-like Character.	Percentage.		Age.	Form of Insanity.	No. of Betz Cells Counted.	No. Showing Axonal-like Character.	Percentage.	
				Negative.	Positive.					Negative.	Positive.
1913. L. 707	42	11	3	27	100	60	G.P.I.	12	...	...	...
L. 710	26	11	4	36		31	Imbecile, med. grade	Numerous	Numerous	...	90
L. 735	40	23	8	34		37	A. delirium	25	23	...	92
L. 737	49	30	2	7		27	D. præcox, hebephrenia	Many	All	...	100
L. 752	57	20	2	10		23	D. præcox, hebephrenia	"	"	...	100
L. 755	22	20	20	...		49	Organic dementia	20	6	30	...
L. 762	24	20	3	15		57	A. delirium	25	5	20	...
L. 803	45	24	4	27		36	A. delirium	20	18	...	90
L. 804	45	25	18	...		40	Imbecile, med. grade	Many	All	...	100
L. 807	51	13	2	15		23	G. P.	30	2	7	...
1914. L. 341	48	6	0	...	72	47	Korsakow's syndrome	20	7	35	...
L. 411	...	20	3	15		39	D. præcox, katatonia	Many	All	...	100
L. 438	25	30	2	7		26	D. præcox, hebephrenia	25	"	...	100
L. 359	50	25	5	20		29	Epilepsy, cong. defect	30	4	13	...
1913. G. 528	12	15	2	23		34	G.P.I.	...	0	...	...
G. 584	29	20	0	...	42	A. delirium	Many	0	...	...	
1914. G. 11	40	17	2	12	33	? D. præcox, hebephrenia	26	1	4	...	
G. 10	64	15	1	7	39	Imbecile, med. grade	Many	All	...	100	
G. 9	54	18	2	11	57	D.T.	20	5	25	...	
G. 231	14	30	17	...	50	A. delirium	20	0	...	...	
15 %.						45 %.					

NOTE.—L. stands for London Hospital, G. for Guy's.

TABLE I. (continued).—MALES.

HOSPITAL SERIES.						ASYLUM SERIES.					
Year and P.M. Number.	Age.	No. of Betz. Cells Counted.	No. Showing Axonal-like Character.	Percentage.		Age.	Form of Insanity.	No. of Betz. Cells Counted.	No. Showing Axonal-like Character.	Percentage.	
				Negative.	Positive.					Negative.	Positive.
1913. L. 609	30	11	4	36	...	49	Delusional	...	Majority	...	50+
L. 711	53	13	2	15	...	30	D. præcox	35	5	14	...
L. 719	32	10	3	30	...	64	Korsakow's syndrome	Numerous	All	...	100
L. 720	60	28	5	18	...	43	Chronic melancholia	"	"	...	100
L. 748	40	10	1	10	...	40	Gen. par.	"	0	...	...
L. 797	56	20	2	10	...	38	Cerebral syphilitic dementia	25	12	48	...
L. 799	50	20	8	40	...	43	Gen. par.	30	1	3	...
L. 812	14	29	3	10	...	40	"	12	1	8	...
L. 813	53	23	5	22	...	33	"	20	0	...	...
1914. L. 303	61	14	3	21	...	63	Sec. dem.	20	10	...	50
L. 319	60	30	15	...	50	36	"	Numerous	All	...	100
L. 322	54	18	4	11	...	32	Gen. par.	40	3	7	...
L. 345	72	30	1	3	...	43	"	25	0	...	...
L. 347	39	37	5	14	...	14	Idiocy without epilepsy	15	8	...	53
L. 353	59	13	0	...	...	53	? D. præcox	...	All	...	100
L. 381	76	...	All	...	100	26	Epilepsy, cong. defect	50	8	16	...
L. 414	44	24	3	12	...	29	Epilepsy, cong. defect	17	4	24	...
L. 420	49	27	4	15	...	51	Melancholia	26	3	11	...
L. 439	60	15	0	...	...	51	"	11	3	27	...
1913. G. 518	50	22	2	9	...	56	"	30	9	30	...
G. 521	...	6	0	...	...	34	Imbecile without epilepsy	27	5	18	...
G. 531	25	32	10	31	...	32	Gen. par.	20	2	10	...
G. 532	23	18	6	33	...	23	Imbecile without epilepsy	Many	All	...	100
G. 571	48	12	2	17	...	49	Gen. par.	"	"	...	100
G. 576	10	13	2	15	...	51	Agit. mel.	"	"	...	100
G. 588	67	16	2	12	...	7	Cong. with epilepsy	"	0	...	...
1914. G. 6	24	10	0	...	...	32	A. delirium	"	Majority	...	50+
G. 208	42	21	...	...	...	65	"	50	5	10	...
G. 225	27	28	...	...	...	71	Senile dem.	...	0	...	...
G. 228	49	17	4	24	...	39	Gen. par.	Many	0	...	...
30 males, Betz cells axonal-like in 2 or 7 %.						30 males, with axonal-like cells in 11 or 36 %.					
50 hospital cases, Betz cells axonal-like in 5 or 10 %.						50 asylum cases, with axonal-like Betz cells in 20 or 40 %.					



TABLE II.  
CONTRASTING THE OCCURRENCE AND DISTRIBUTION OF DEGENERATED NERVE CELLS WITH  
PERINUCLEAR HALO IN ASYLUM AND HOSPITAL CASES.

ASYLUM.										HOSPITAL.					
MALDS.	Age.	LAYER.					MALDS.	Age.	LAYER.						
		2nd.	Outer 3rd.	Inner 3rd.	Betz.	Spindles.			2nd.	Outer 3rd.	Inner 3rd.	Betz.	Spindles.		
Cong. defect with epilepsy -	13	+	+	...	...	...	1913. L. 711	53	+	+	...	...	...		
Do. do.	25	...	...	+	...	...	L. 789	50	...	...	...	...	...		
Do. do.	26	+	...	...	...	...	1914. L. 322	54	...	...	...	...	...		
Cong. defect without epy.	7	...	...	+	...	...	L. 347	39	...	...	...	...	...		
Do. do.	9	+	+	...	...	...	L. 662	31	+	...	...	...	...		
Dementia precox (H.)	19	+	...	...	...	...	G. 507	10	+	+	...	...	...		
Do. do.	53	...	...	...	...	...	G. 573	5	+	...	...	...	...		
Acute delirium !	32	...	...	+	...	...	G. 571	48	+	+	...	...	...		
Do. do.	65	...	...	+	...	...	G. 578	29	+	+	...	...	...		
Acute melancholia	41	+	...	+	...	...	G. 588	67	+	+	...	...	...		
	10	5	3	5	1	3	1914. G. 6	24	+	+	...	...	...		
			7				G. 17	38	+	8	3	1	4		
Percentage	33	...	...	...	...	...		12	9	9					
FEMALES.															
Cong. defect without epy.	39	+	...	...	...	...	1913. L. 710	26	+	+	...	...	...		
Dementia precox (K.)	39	+	...	+	...	...	1914. L. 415	17	...	...	...	...	...		
Do. do. (H.)	40	+	+	...	...	...	1913. G. 536	6	+	+	...	...	...		
Recent mania	32	...	...	+	...	...	1914. G. 10	64	...	+	...	...	...		
	4	3	2	2	...	2	G. 231	14	3	4	...	2			
			3					5		5					
Percentage	13	...	...	...	...	...	Percentage	17	...	...	...	...	...		

HOSPITAL CASES. TABLE III.

			Age.	GLIOSIS.				COLLOID BODIES.				VESSELS.						
				Cere-brum.		Cere-bellum.		Cere-brum.		Cere-bellum.		Walls.		P.V. Space.		Pigment.		
				Zonal.	White.	Mol.	White.	Zonal.	White.	Mol.	White.	C.	Cblm.	C.	Cblm.	C.	Cblm.	
1913.	L. 707	-	42	...	...	...	...	...	...	+	...	E	...	...	...	+	...	
	L. 710	-	26	...	...	...	...	...	...	...	...	...	...	+	...	+	...	
	L. 735	-	40	...	...	...	...	...	+	...	+	...	...	...	...	+	...	
	L. 737	-	49	...	...	...	...	...	+	+	+	+	...	...	...	+	...	
	L. 752	-	57	+	...	...	...	...	...	...	...	...	...	...	...	...	...	
	L. 755	-	22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
	L. 762	-	24	...	...	...	...	...	...	...	...	+	+	...	...	+	...	
	L. 803	-	45	...	...	...	+	...	+	...	+	...	...	...	...	...	...	
	L. 804	-	45	...	...	...	...	...	...	...	...	+	...	...	...	...	...	
	L. 807	-	51	+	+	...	+	...	+	...	+	...	...	...	...	...	...	
	1914.	L. 341	-	48	+	+	+	...	...	...	...	...	C	...	...	...	+	...
		L. 359	-	50	+	...	...	...	+	+	+	...	...	...	+	...	+	...
		L. 411	-	39	+	+	+	+	...	...	...	...	...	...	+	...	+	...
		L. 438	-	25	+	...	...	...	...	+	...	...	...	...	...	...	...	...
L. 417		-	17	...	...	...	...	...	...	...	...	+	...	...	...	...	...	
1913.	L. 435	-	43	+	...	...	...	...	+	...	...	...	...	+	...	...	...	
	G. 528	-	12	...	...	...	+	...	...	...	...	+	...	...	...	...	...	
	G. 540	-	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
1914.	G. 584	-	29	...	...	...	...	...	+	...	...	H	...	...	...	+	...	
	G. 9	-	54	...	...	...	+	...	...	...	...	...	...	...	...	...	...	
	G. 10	-	64	+	...	...	...	...	...	...	...	...	...	...	...	...	...	
1913.	G. 11	-	40	...	+	+	+	...	...	+	...	...	...	...	...	+	...	
	G. 231	-	14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
	G. 503	-	1	+	...	...	...	...	...	...	...	...	...	...	...	...	...	
	G. 536	-	7	+	...	...	...	...	...	...	...	...	...	...	...	...	...	
	G. 573	-	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
( ? G.P.)	G. 574	-	29	+	...	...	...	...	...	...	...	...	...	+	...	...	...	
	G. 583	-	13	+	...	...	...	...	+	...	...	...	...	+	...	...	...	
1914.	G. 207	-	65	+	...	...	+	...	+	+	...	HE	H	...	...	...	...	
	G. 244	-	29	+	+	...	...	...	...	...	...	...	...	A	...	...	...	
			...	14	5	3	7	9	3	8	1	8	3	7	...	10	...	
Percentages			...	47	17	10	23	30	10	27	3	27	10	23	...	33	...	

An L. before the number signifies

## FEMALES.

## ASYLUM CASES.

	Age.	GLIOSIS.				COLLOID BODIES.				VESSELS.					
		Cere-brum.		Cere-bellum.		Cere-brum.		Cere-bellum.		Walls.		P.V. Space.		Pigment.	
		Zonal.	White.	Mol.	White.	Zonal.	White.	Mol.	White.	C.	Cblm.	C.	Cblm.	C.	Cblm.
Genl. paralysis -	60	+	...	...	...	...	...	+	...	...	...	+	...	...	...
Cong. defect -	31	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Acute delirium -	37	...	+	not exmd.	...	...	...	not exmd.	...	...	...	...	...	...	...
D. præcox -	27	...	...	...	...	...	...	...	...	...	...	...	...	...	...
" "	23	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Organic dement.	49	+	...	not exmd.	+	...	...	not exmd.	...	...	...	...	...	...	...
Acute delirium -	57	...	...	...	+	+	+	...	...	...	...	...	...	...	...
D. præcox -	36	...	...	...	+	...	...	...	...	...	...	...	...	...	...
Cong. defect -	40	...	...	...	...	...	...	...	...	...	...	...	...	+	...
Genl. paralysis -	23	+	+	...	...	...	...	...	...	...	...	+	...	...	...
Korsakow's dia.	47	...	...	...	...	...	...	+	+	...	...	...	...	...	...
D. præcox (K.) -	39	...	...	...	...	...	...	...	...	...	...	...	...	...	...
D. præcox -	28	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cong. defect -	29	...	...	not exmd.	...	...	...	not exmd.	...	...	...	...	...	...	...
Genl. paralysis -	34	+	+	...	...	...	...	...	...	...	...	+	...	...	...
Acute delirium -	42	...	...	...	...	...	...	...	...	...	...	...	...	...	...
D. præcox -	33	+	...	...	...	...	...	...	...	+	...	...	...	+	...
Cong. defect -	39	+	...	+	...	...	...	...	...	...	...	...	...	+	...
Acute delirium -	50	...	...	...	...	+	...	+	...	...	...	...	...	+	...
Del. tremens -	57	...	...	...	...	...	...	...	...	...	...	...	...	...	...
D. præcox -	34	+	...	...	...	...	...	...	...	...	...	...	...	...	...
Idiocy -	44	+	...	...	+	...	...	...	...	...	...	...	...	...	...
Delusional insan.	35	...	...	+	+	...	...	...	...	...	...	...	...	...	...
Recent mania -	32	...	...	...	...	...	...	...	...	...	...	...	...	+	...
Acute delirium -	34	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Korsakow's dia.	48	...	...	...	...	+	...	...	...	H	...	...	...	...	...
" "	61	...	...	not exmd.	...	...	...	not exmd.	...	...	...	...	...	...	...
D. præcox -	21	...	+	...	...	...	...	...	...	...	...	...	...	...	...
Genl. paralysis -	31	+	+	+	+	...	...	...	...	...	...	+	...	...	...
Recent melancholia -	47	...	...	...	...	...	...	...	...	...	...	+	...	...	...
	...	9	5	3	5	4	1	3	1	2	...	5	...	5	...
Percentages -	...	30	17	11	20	13	3	11	4	7	...	17	...	17	...

London Hospital; &amp; G. Guy's Hospital.

TABLE III

## MALES.

	Age.	GLIOSIS.				COLLOID BODIES.				VESSELS.					
		Cere-brum.		Cere-bellum.		Cere-brum.		Cere-bellum.		Walls.		P. Vas. Nucleus.		Pigment.	
		Zonal.	White.	Mol.	White.	Zonal.	White.	Zonal.	White.	C.	Cblm.	C.	Cblm.	C.	Cblm.
Acute melancholia -	41	...	...	...	...	...	...	...	...	+	...	+	...	...	...
Congenital defect -	9	...	...	...	...	...	...	...	...	+	...	...	...	+	...
Korsakow's dis. -	64	...	...	...	...	+	...	+	...	H	H	...	...	...	...
Chronic melancholia -	43	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Epilepsy -	44	+	+	...	...	...	...	...	...	...	...	...	...	...	...
Dementia -	63	...	...	...	+	...	...	+	+	...	...	...	...	...	...
? D. præcox -	19	...	...	...	...	...	...	...	...	H	+	...	...	...	...
Idiocy -	14	...	...	...	...	...	...	...	...	...	...	...	...	...	...
? D. præcox -	53	+	...	...	...	...	...	...	...	...	...	...	...	...	...
Cong. defect -	26	+	...	...	...	...	...	...	...	...	...	...	...	...	...
" " -	29	+	...	...	+	...	...	...	...	...	...	+	...	+	...
Melancholia -	51	...	...	...	...	...	...	...	...	...	...	+	...	...	...
Recent melancholia -	51	...	...	...	...	+	...	...	...	...	...	...	...	...	...
Acute delirium -	37	...	...	...	...	...	...	...	...	...	...	...	...	+	...
Cong. defect -	34	...	...	...	...	...	...	...	...	...	...	...	...	...	...
(?) -	52	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cong. defect -	23	...	...	...	...	...	...	...	...	...	...	...	...	...	...
? D. præcox -	49	+	...	...	+	+	+	...	...	H	...	...	...	+	...
Agitated melancholia -	51	...	...	...	...	+	...	+	...	+	H	...	...	+	...
Cong. defect -	7	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Acute delirium -	32	...	...	...	...	...	...	...	...	...	...	...	...	...	...
" " -	65	...	...	...	...	+	...	...	...	+	...	...	...	...	...
Acute mania -	71	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Korsakow's dis. -	41	+	...	...	...	...	...	...	...	...	...	...	...	...	...
Cong. defect -	42	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Acute mania -	42	...	...	...	...	...	...	...	...	H	...	...	...	...	...
Epileptic insanity -	38	+	...	...	...	+	...	...	...	...	...	+	...	...	...
Melancholia -	45	...	...	...	...	+	...	...	...	H	...	...	...	...	...
Cong. defect -	13	...	...	...	...	...	...	...	...	...	...	...	...	...	...
" " -	25	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Carry forward -	...	7	1	...	3	7	1	3	1	9	3	4	...	5	...
Percentages of Asylum cases without G.P. }	...	23	3	...	10	23	3	10	3	30	10	13	...	17	...

## ASYLUM SERIES.

## MALES.

	Age.	GLIOSIS.				COLLOID BODIES.				VESSELS.					
		Cerebrum.		Cerebellum.		Cerebrum.		Cerebellum.		Walls.		P. Vas. Nucleus.		Pigment.	
		Zonal.	White	Zonal.	White	Zonal.	White	Mol.	White	C.	Cblm.	C	Cblm.	C.	Cblm.
Brought forward -	...	7	1	...	3	7	1	3	1	9	3	4	...	5	...
General paralysis -	40	+	+	+	+	...	...	...	...	...	...	+	...	...	...
" "	43	+	+	...	...	...	...	...	...	...	...	+	...	...	...
" "	40	...	...	...	+	...	...	...	...	...	...	+	...	...	...
" "	33	...	...	...	...	...	...	...	...	...	...	+	...	...	...
" "	32	+	+	...	...	...	...	...	...	...	...	+	...	...	...
" "	13	+	+	...	+	...	...	...	...	...	...	+	...	...	...
" "	43	+	...	...	...	+	...	...	...	...	...	+	...	...	...
" "	32	...	...	+	+	...	...	...	...	...	...	+	+	...	...
" "	29	...	...	...	...	...	...	...	...	H	...	+	...	...	...
" "	32	+	+	...	...	...	...	...	...	...	...	+	...	...	...
" "	31	+	+	+	+	...	...	...	...	H	...	+	+	...	...
" "	40	...	+	...	+	...	...	...	...	H	E	+	...	...	...
" "	71	+	+	...	...	...	...	...	...	H	...	+	...	+	...
	...	15	9	3	9	8	1	3	1	13	4	17	2	6	...
Percentages of															
43 Asylum cases -	...	35	21	7	21	18	2	7	2	30	9	40	4	14	...
13 General paralysis	...	61	61	23	46	8	...	...	...	30	8	100	15	8	...
43 Hospital cases -	...	37	14	16	23	14	14	35	2	50	21	32	9	32	...

TABLE III.

## HOSPITAL

## LONDON.

				Age.	GLIOSIS.				COLLOID BODIES.				VESSELS.							
					Cere-brum.		Cere-bellum.		Cere-brum.		Cere-bellum.		Walls.		P.V. Space.		Pigment.			
					Zonal.	White	Mol.	White	Zonal.	White	Mol.	White	C.	Cblm.	C.	Cblm.	C.	Cblm.		
1913.	609	-	-	30	...	...	...	...	...	...	...	...	+	E	...	...	...	...		
	711	-	-	53	...	...	...	...	...	...	...	...	...	...	+	...	+	...		
	714	-	-	4	...	...	...	...	...	...	...	...	...	...	+	...	...	...		
	719	-	-	32	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
	720	-	-	60	+	...	...	...	+	...	+	...	...	...	...	...	...	...		
	748	-	-	40	+	+	...	...	...	...	...	...	...	...	...	...	+	...		
	797	-	-	56	...	...	...	...	...	+	+	...	H	...	...	...	+	...		
	799	-	-	50	...	...	...	...	...	...	+	...	+	...	...	...	+	...		
	812	-	-	14	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
	813	-	-	53	+	...	...	...	+	+	+	+	H	...	...	...	...	...		
	1914.	303	-	-	61	...	...	...	+	...	...	+	...	H	H	H	+	...	+	...
		319	-	-	60	+	+	...	+	...	+	+	...	H	H	H	+	...	+	...
322		-	-	54	+	+	...	+	...	...	+	...	...	F	...	...	+	...		
345		-	-	72	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
347		-	-	39	...	...	...	+	...	+	...	...	H	F	F	...	...	+	...	
353		-	-	59	...	+	...	+	...	...	+	...	H	F	F	+	...	+	...	
381		-	-	76	+	+	...	+	+	+	+	...	H	F	F	+	...	+	...	
414		-	-	44	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
420		-	-	49	+	...	...	...	+	...	...	...	+	...	+	...	...	...	...	
439		-	-	60	...	...	...	...	...	...	+	...	+	...	...	...	...	...	...	
1913.		662	-	-	31	...	...	...	...	...	...	...	...	...	+	...	+	...	...	
1914.		409	-	-	62	+	...	...	...	...	+	...	...	...	+	...	+	...	...	
	441	-	-	46	...	...	...	...	...	...	...	H	...	...	...	...	...	...		
				...	8	5	...	6	4	6	10	1	12	7	8	...	12	...		

## MALES.

## SERIES.

## GUY'S.

				GLIOSIS.				COLLOID BODIES.				VESSELS.							
				Age.		Cerebrum.		Cerebellum.		Cerebrum.		Cerebellum.		Walls.		P.V. Space.		Pigment.	
						Zonal.	White	Mol.	White	Zonal.	White	Mol.	White			C.	Cblm.		
1913.	518	-	-	50	...	...	...	...	...	...	+	...	...	...	+	...	...	...	
	521	-	-	...	...	...	+	+	...	...	...	...	+	...	...	...	...	...	
	531	-	-	25	+	...	...	...	...	...	...	...	...	...	...	+	...	...	
	532	-	-	23	...	...	+	...	...	...	...	...	...	...	...	...	...	...	
	535	-	-	3	+	...	+	+	...	...	...	...	+	...	+	...	...	...	
	571	-	-	48	+	...	...	...	...	...	...	...	+	...	+	...	...	...	
	576	-	-	10	+	...	...	...	...	...	...	...	...	...	...	...	...	...	
	588	-	-	67	...	...	...	...	+	...	+	...	...	...	...	+	+	...	
1914.	628	-	-	22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
	6	-	-	24	+	...	...	...	...	...	+	...	+	...	...	...	...	...	
	208	-	-	42	...	...	+	...	...	...	+	...	+	...	...	...	...	...	
	225	-	-	27	+	+	+	+	+	...	...	...	H	...	...	+	...	...	
1913.	228	-	-	49	...	...	...	...	...	...	+	...	H	+	...	...	...	...	
	507	-	-	10	...	...	+	...	...	...	...	...	...	...	...	...	...	...	
	513	-	-	5	...	...	...	...	...	...	...	...	...	...	+	...	...	...	
	542	-	-	39	+	...	...	...	...	...	...	...	...	+	+	+	...	...	
	578	-	-	29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
	586	-	-	13	...	...	...	...	...	...	...	...	H	...	+	...	...	...	
	630	-	-	28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
17	-	-	38	+	...	+	+	...	...	...	...	...	...	...	...	+	...		
				...	8	1	7	4	2	...	5	...	9	2	6	4	2	...	
London	-	-	-	...	8	5	-	6	4	6	10	1	12	7	8	...	12	...	
Guy's	-	-	-	...	8	1	7	4	2	...	5	...	9	2	6	4	2	...	
Total	-	-	-	...	16	6	7	10	6	6	15	1	21	9	14	4	14	...	
Percentage	-	-	-	...	37	14	16	23	14	14	35	2	50	21	32	9	32	...	

Under Vessels, Peri-Vascular Space, + signifies an increase of nuclei or cells, which, except in the general paralysis, is usually slight in amount.

# Abstracts

## ANATOMY.

### AN EXPERIMENTAL RESEARCH INTO THE ANATOMY AND

(1) **PHYSIOLOGY OF THE CORPUS STRIATUM.** S. A. KINNIER WILSON, *Brain*, 1914, xxvi., p. 427.

TWENTY-FIVE monkeys were experimented upon, both stimulation and electrolytic methods being utilised; the degenerated fibres were traced later by the Marchi method. The cardinal anatomical connections of the corpus striatum are as follows:—(1) It is independent of the cerebral cortex; (2) the putamen and caudate nucleus are closely linked together, and both to the globus pallidus; (3) the main striofugal and striopetal fibre-groups are related to the globus pallidus only, and not to the putamen and caudate directly; (4) the striofugal groups preponderate, and link the globus pallidus with the optic thalamus and the regio subthalamica, including the nucleus ruber, corpus subthalamicum and substantia nigra; (5) the corpus striatum is not connected directly with the spinal cord; (6) the corpora striata are, directly at least, independent of each other. These anatomical data indicate that the corpus striatum is an autonomous centre, that its function is exercised independently of the cerebral cortex, and that that function is motor in type, *i.e.*, it is exercised in an efferent or caudal direction. It is also clear that the corpus striatum and its projection system is not identical in function with the motor cortex and its projection system. The localisation of "automatic movements" in the corpus striatum, or its description as a "subcortical motor centre," whose motor function is in any way analogous to that of the motor centres of the cerebral cortex, cannot be entertained. It is electrically inexcitable, and comparatively large unilateral lesions do not give rise to any unmistakable motor phenomena.

Phylogenetically it is an old structure. In fishes it consists of a palæostriatum only, corresponding to the globus pallidus. The neostriatum, which represents the putamen and caudate nucleus, appears in reptiles and birds. From the palæostriatum a bundle of fibres passes to the optic thalamus, which is linked up to the motor nuclei in the brain and spinal cord by the posterior longitudinal fasciculus. This is the homologue of the cortico-spinal paths of man, and is the only descending tract in the fishes. The thalamus and corpus striatum at one stage thus function as a brain in miniature. The corpus striatum and its projection system have depreciated with the development of the pallium and cortico-spinal



fibres above the original palæostriatum motor centre, thus doubling the descending paths. Its function in man appears to be to steady pyramidal innervation along the "final common path," the absence of this influence resulting in tremor, increase of pyramidal action, as a rule, thus causing increase of the tremor (*v. Review*, 1913, xi., p. 167).

**THE DISTRIBUTIONS OF NERVES TO THE ARTERIES OF THE**

(2) **LEG.** L. W. POTTS, *Anat. Anzeiger*, 1914, xlvii., Aug. 3, S. 138-143.

THE distribution of vascular nerves in the leg is much more extensive than is usually supposed. The sympathetic supply for the vessels of the lower extremity reaches the main vessels at intervals along their course. The small vessels differ from the large ones, as a rule, in not having special nerves of supply, but in obtaining their nerve plexuses direct from the sympathetic plexus on the parent artery. Local damage to a large artery will injure the vascular plexus at the point of damage only, but will not account for changes produced in the vessel at a distance from the injured site. This would denote nerve damage at some distance from the arterial tree.

A. NINIAN BRUCE.

**PHYSIOLOGY.**

**ON THE SECRETORY INNERVATION OF THE HYPOPHYSIS.**

(3) I. RABENS and J. LIFSCHITZ, *Amer. Journ. Physiol.*, 1914, xxxvi., Dec. 1, pp. 47-56.

THE presence of secretory nerves governing the activity of the hypophysis cannot be demonstrated by the glycosuria or hyperglycemia methods. The glycosuria resulting from the stimulation of the superior cervical ganglia is undoubtedly due to the effects of prolonged anæsthesia, and not to an excessive activity of the hypophysis caused by stimulation of a secretory nervous pathway to the gland.

A. NINIAN BRUCE.

**STUDIES ON CEREBRO-SPINAL FLUID.—VIII. THE EFFECT OF**

(4) **PITUITARY EXTRACT UPON ITS SECRETION (CHOROID-ORRHŒA).** LEWIS H. WEED and HARVEY CUSHING, *Amer. Journ. Physiol.*, 1915, xxxvi., Jan., pp. 77-103.

THE authors record a number of experiments from which they conclude that extracts of the posterior lobe of the hypophysis increase the rate of production of cerebro-spinal fluid (choroid-orrhœa) by stimulating the secretory activity of the choroid plexuses (*cf. Review*, 1914, xii., p. 513).

A. NINIAN BRUCE.

- THE MECHANISM OF LABYRINTHINE NYSTAGMUS AND ITS**  
 (5) **MODIFICATIONS BY LESIONS IN THE CEREBELLUM AND**  
**CEREBRUM.** J. GORDON WILSON and F. H. PIKE, *Archives of*  
*Intern. Med.*, 1914, xv., Jan., p. 31.

IN labyrinthine nystagmus we are dealing with a double movement, a slow deviation and a quick return. The slow deviation is of labyrinthine origin. Variations in the manner of the quick return indicate disturbance in the oculomotor rather than in the labyrinthine or vestibular mechanism. Double vision never occurs unless some intracranial complication or oculomotor paralysis is also present. Removal of the cerebellum does not abolish the nystagmus following labyrinthine destruction. Complete decerebration, including the corpora striata and the thalamus, wholly abolishes the quick component after labyrinthine stimulation or removal, although the slow deviation of the eyes persists. Complete removal of the cerebral hemisphere on the side of the slow deviation abolishes all except a small rotatory component of the quick phase of nystagmus. Complete removal of the cerebral hemisphere of the side toward which the quick component is directed has but little effect on the quick movement. Injury to the anterior corpus quadrigeminum of the side to which the slow deviation of the eyes is directed does not abolish the nystagmus either in its slow or quick phase, but it does bring about a dissociation of the eye movements. The only region of the hemisphere where injury seemed to produce consistent alteration of the labyrinth stimulation, and that only so far as the quick component is concerned, is the region of, or adjacent to, the temporal lobe.

A. NINIAN BRUCE.

- THE INFLUENCE OF THE VAGUS ON PANCREATIC SECRE-**  
 (6) **TION.** G. VON ANREP, *Journ. of Physiol.*, 1914, xlix., Dec. 22, p. 1.

FROM experiments on dogs anæsthetised with chloroform and ether mixture, the use of morphia being avoided as this drug affects injuriously the secretory fibres of the vagus, the writer concludes:—" (1) The experiments confirm the statement that the vagus contains not only secretory but also inhibitory fibres to the pancreas. This holds both for the vagi in the neck and for their branches; (2) no support can be given to Popielski's view that secretory and inhibitory fibres are differently distributed in the vagus trunk—they are found equally in all branches, including the special secretory branch of the vagus which he described; (3) the secretion of pancreatic juice excited by the administration

of secretin can also be inhibited by stimulation of the vagus; (4) atropin in doses sufficient to paralyse the secretory fibres of the vagus does not paralyse the inhibitory ones."

LEONARD J. KIDD.

**THE CARDIO-VASCULAR PRESSURE IN EXPERIMENTAL**

- (7) **SUPRARENAL DISEASE.** (*La pressione cardio-vascolare nelle surrenopatie sperimentali.*) G. LUCIBELLI, *Gazz. internaz. di med. chir., etc.*, 1914, p. 741.

As a result of his observations on rabbits with François-Frank's apparatus, Lucibelli comes to the following conclusions:—

1. The cardio-vascular pressure is sensibly diminished in rabbits from which one suprarenal has been removed.
2. This diminution is still more marked if the other suprarenal is damaged or partially removed.
3. In course of time the blood-pressure in rabbits deprived of one suprarenal gradually returns to normal, or even rises higher owing to hypertrophy and hyperplasia of the remaining suprarenal and the other glands of internal secretion. J. D. ROLLESTON.

**SOME RESULTS OF EXCISION OF THE ADRENAL GLANDS.**

- (8) T. R. ELLIOTT, *Journ. of Physiol.*, 1914, xlix., Dec. 22, p. 38.

SUMMARY:—"Removal of one adrenal gland in a cat does not obviously affect the animal's health, nor does it when, in addition, the splanchnic nerves on the opposite side are cut. It causes usually some hypertrophy of the remaining adrenal, and of accessory adrenals. The hypertrophy is almost entirely of cortical tissue. Subsequent removal of the remaining gland practically always causes death, but death does not usually follow as quickly as when the two glands are removed at one operation; this is probably a consequence of the hypertrophy mentioned above. In the moribund cat the blood-pressure is low, and there is nearly complete paralysis of the vasomotor and cardio-accelerator nerves (all other nerves reacting in an approximately normal manner). Thus stimulation of the splanchnic nerves, and injection of nicotine, cause very slight rise of blood-pressure. The paralysis is due to a change in the unstriated muscle, since pituitary extract and barium chloride have little or no effect. On the other hand, a rise of blood-pressure and a quickening of the heart beat are still caused by adrenalin. The paralysis of vasomotor nerves is not due to shock. A sufficient decrease of temperature causes a somewhat similar paralysis, but the decrease of temperature in the glandless animal is insufficient to account for the paralysis

found. The paralysis is then a change due to the absence of adrenal secretion.

"Some evidence is given that the cortical adrenal cells influence sex characters."

LEONARD J. KIDD.

**THE PHYSIOLOGICAL ACTIVITY OF THE ADRENALS OF**  
(9) **PANCREATECTOMISED ANIMALS.** (*Valeur physiologique de la glande surrénale des animaux privés de pancreas.*) E. GLEY,  
*Compt. Rend. Soc. de Biol.*, 1915, lxxviii, p. 1.

THE theory that the pancreas exerts normally a continuous inhibitory action on the functions of the adrenals, so that pancreatectomy gives rise to increased activity of their chromaffin substance, has been tested experimentally by Gley on dogs. In some of his dogs complete pancreatectomy was performed, with resultant diabetes, while in others the duct of Wirsung was injected with gelatine or fat, by which means the digestive function of the pancreas is abolished, whereas its action on carbohydrate metabolism is preserved. Immediately after death of all the animals their adrenals were dried *in vacuo*; and a few days later extracts prepared from them were tested on dogs and rabbits as to their vasoconstrictor power. The results were in all cases that, to judge by the activity of these extracts on blood-pressure, the adrenalin-content of the glands was not greater than normal, nor was it less than normal.

LEONARD J. KIDD.

**THE ACTION OF THE TYPHOID AND CHOLERA ENDOTOXINS**  
(10) **ON THE ADRENALS.** (*Action des endotoxines typhique et cholérique sur les capsules surrénales.*) C. A. DÉMÉTRESCU,  
*Réunion Biol. de Bucarest*, 17th Dec. 1914; (*Comp. Rend. Soc. de Biol.*, 1915, lxxvii, 8 Janvier, p. 591).

FROM experiments on rabbits the writer concludes:—(1) The cholera endotoxin causes disappearance of the normal staining reaction of the adrenal chromaffin substance; (2) an extract prepared from the adrenals of animals injected with an emulsion of cholera vibrios killed at 60° contains little or no adrenalin, for (a) this extract causes only slight or no rise of arterial pressure; (b) fails to give the reaction of Ehrmann-Meltzer on the frog's pupil, and (c) does not give the characteristic staining with phosphomolybdenic acid; (3) the typhoid endotoxin has scarcely any effect on the chromaffin substance.

LEONARD J. KIDD.

## PSYCHOLOGY.

**OBSERVATIONS ON THE PSYCHOLOGY OF DAILY LIFE. J.**

(11) KOLLARITS, *Archiv. de Psychol.*, 1914, Aug., p. 225.

THE first part of this paper deals with the visual images which many people form of persons and places unknown to them. The author attempts to analyse such images as they occur in his own experience. He finds that they are made up of elements drawn from what is already known, and that analysis reveals links of association which account for the selection of the special images that are employed. He points out that many people, chiefly nervous subjects, undergo veritable suffering when they are unable to evoke a visual image. He considers that visual imagery is an aid to thought in so far as one can think much more speedily in this way than by means of words.

The second part of the paper deals with automatic and accidental movements, breakages for example. To some extent the writer agrees with Freud's well-known interpretation of such events. Thus during the past three years he has taken his own temperature about 5,000 times, and in so doing has broken perhaps ten thermometers "by accident." Two of the breakages, however, took place within two or three days when his temperature was above normal (*cf. Review*, 1914, xii., p. 464).

Dr Kollarits refers also to those puzzling lapses of memory which cause us not to do things which to the best of our knowledge we wish to do and intend to do. He does not think it necessary with Freud to suppose an active repressive force in these cases; he thinks that it is their lack of interest for us that prevents us keeping them in mind.

A couple of interesting concluding paragraphs suggest that these historic misadventures, such as Ganelon dropping the glove of Charlemagne, which were hailed as omens or portents, may really have been of prophetic import because they indicated the state of mind of the person to whom they happened more truly than the act which he intended to perform.

MARGARET DRUMMOND.

**CONTRIBUTIONS TO THE STUDY OF DREAMS. J. KOLLARITS,**

(12) *Archiv. de Psychol.*, 1914, Aug., p. 248.

THE greater part of this paper is devoted to a discussion of the part played by fear in dreams. As is well known, Freud considers that all dreams are expressive of desires. According to him the fact that the sleeper experiences fear or anxiety in a dream is a

sign that the wishes which find their satisfaction in the dream have been thrust from the conscious life. In an endeavour to test the truth of this theory, Dr Kollarits recounts dreams of his own in which fear was present, and subjects those dreams to an analysis. The results of his analysis do not substantiate Freud's theory in every case, and he remains convinced that certain dreams spring directly from waking fears and represent the fulfilment of those fears.

MARGARET DRUMMOND.

**AN EXAMPLE OF DISSOCIATED PERSONALITY.** ERNEST G.  
(13) GREY and WARREN R. SISSON, *Boston Med. and Surg. Journ.*, 1914  
clxxi., Sept. 3, p. 365.

THE case is that of a woman, aged 23, referred to as Mrs X., who brought her child to hospital for treatment. He was poorly nourished and anæmic, and she showed little concern for him. She then came alone, and it was found she suffered from mitral insufficiency and had a history of chorea and rheumatic fever as a child.

Two days later she again came to hospital, called herself Mrs A., said her age was 24, and gave a different address. Three days later she reappeared as a well-dressed young woman, calling herself Miss B. She said she had come with Mrs X's child to inquire about Mrs X's heart trouble. She said Mrs X. was her sister, spoke freely of her and acted as if she had never been there before. She told how Mrs X's first engagement had fallen through, and her subsequent marriage to some one else had been without affection. She said Mrs X. had often embarrassed herself greatly by calling herself Mrs A. Later Mrs X. returned and told how her sister-in-law, husband, and friends had all accused her of impersonating other people. She said it was unjust, as Mrs A. was entirely different in every way from her. At subsequent visits it turned out that the true Mrs X. became much worried in case she had done things indiscreet while Mrs A. or Miss B.

It was considered that her repressed psychic activities had taken the form of several personalities, first of Mrs A., the real Mrs A. being a person who had had all of her expectations of married life gratified; and second, of Miss B., an attractive young milliner. An area of complete anæsthesia was present involving the right breast, shoulder, and upper arm, and by suggestion it was attempted with considerable success to re-establish her original personality. The case was diagnosed as periodic dissociation of personality in a hysterical subject.

A. NINIAN BRUCE.

**A CRITICISM OF PSYCHOANALYSIS.** J. VICTOR HABERMAN, *Journ.* (14) *Abnorm. Psychol.*, 1914, Oct.-Nov.

THE author criticises certain aspects of the Freudian theory—the sexual, the subconscious, and symbolism. “A diagnosis in the Freudian sense,” said Strenbli of Basel, “is a diagnosis of the mind that made it.”

The author appeals for inquiry as to the personality on the lines of “anamnestic analysis”—a probing without the use of symbolism, or interpretation, or translation; by such a procedure it is possible to show how much of the past makes up mind-tendencies of the present, to what degree past “affects” can produce negative influence in the present, and how symptoms may be explained without symbolism. H. DE M. ALEXANDER.

## PATHOLOGY.

**CONCERNING SURVIVAL AND VIRULENCE OF THE MICRO-ORGANISM CULTIVATED FROM POLIOMYELITIC TISSUES.** (15) SIMON FLEXNER, HIDEYO NOGUCHI, and HAROLD L. AMOSS, *Journ. Exp. Med.*, 1915, xxi., Jan., pp. 90-102. (11 figs.)

THE minute micro-organism cultivated from poliomyelitic tissues survives and maintains its pathogenicity in cultures for more than one year. Upon inoculations into monkeys, poliomyelitis may fail to appear upon the first injection, and yet follow from the effects of successive injections of the culture. Inoculations of cultures into monkeys which fail to produce paralysis, may fail also to induce resistance or immunity. The lesions occurring in the spinal cord, medulla and intervertebral ganglia of the monkeys which respond to the several inoculations of the cultures are identical with those present in the nervous organs of the animals responding to injection of the ordinary virus. Glycerinated nervous tissues derived from the monkeys responding to several injections of the cultures transmit experimental poliomyelitis to monkeys upon intra-cerebral inoculation. The micro-organism cultivated from poliomyelitic tissues is adapted with difficulty to saprophytic conditions of multiplication, but once adapted growth readily takes place upon suitable media. When, however, as a result of inoculation into monkeys, the parasitic propensities of the micro-organism are restored, it again displays the marked fastidiousness to artificial conditions of multiplication present at the original isolation. A. NINIAN BRUCE.

## CLINICAL NEUROLOGY.

- ON AMYOTONIA CONGENITA. OPPENHEIM'S DISEASE.**  
 (16) (*Über amytonia congenita. Oppenheimsche Krankheit.*) B. BRAUWER and J. C. SCHIPPERS, *Psychiatr. en Neurolog. Blad.*, 1914, Nos. 4 and 5.

THE writers review the literature and record a case in a boy aged  $4\frac{1}{2}$  years, who had had flaccid paralysis of the muscles of the extremities since birth. The condition had not grown worse, but had shown slight improvement since then. There was marked hypotonus in all the joints. Circumscribed atrophy was not observed. The tendon reflexes were lost. Electrical excitability of the muscles was diminished without R.D. The intelligence, sensibility, and special senses were not affected. The autopsy showed marked atrophy in the muscles, with increase of connective tissue and fat, disappearance of the myelin in the anterior roots of the spinal cord, and considerable diminution in the number of the anterior cornual cells. The other systems were intact, and no change could be found in the central nervous system to indicate arrest of development or disease. J. D. ROLLESTON.

- MYATONIA CONGENITA, WITH REPORT OF CASES.** CHARLES  
 (17) HUNTER DUNN, *Boston Med. and Surg. Journ.*, 1914, clxxi., July 30, p. 191.

THREE cases are here reported, the first in a child aged 6 months, the second and third in children 5 months old. Two of the cases had been long under observation without any suspicion that there was anything wrong except weakness and malnutrition. An autopsy was only obtained in the first case. The most striking lesion was found in the voluntary muscles. They were atrophied, infiltrated with fat, and fused with the surrounding connective tissue. Many of the larger fibres were vacuolated, the fibrillæ stained badly, and the nuclei were extremely numerous. Some fibres were so small as to be occupied entirely by one nucleus. The cortex, cerebellum, pons, and medulla oblongata were normal. The spinal cord showed slight but unimportant changes. The thymus gland was enlarged. The symptomatology, pathology, etiology, course and prognosis are discussed, and it is pointed out that the disease is possibly commoner than is generally supposed.

A. NINIAN BRUCE.



- LOCAL HYPERTHERMIA AND VIBRATION-ANÆSTHESIA IN**  
 (18) **TABETIC ARTHROPATHY.** (Sur l'existence d'une hyperthermie locale et d'anesthésie vibratoire dans l'arthropathie tabétique.) G. MARINESCO, *Réunion Biol. de Bucarest*, Dec. 17, 1914; (*Compt. Rend. Soc. de Biol.*, 1915, lxxvii., 8 Janvier, p. 592).

MARINESCO insists on the constancy of a local hyperthermia in the region of the joints affected by arthropathy and at the site of the spontaneous fractures in tabes, and also on the very great frequency of vibration-anæsthesia at these levels. The hyperthermia can be felt by the hand, and the local skin-temperature exceeds that of the opposite limb by two to four degrees: the skin is sometimes reddened: the hyperthermia may last for months or years, but tends to diminish in proportion to the lessening of the effusion; in addition, the artery of the affected limb beats more strongly than does its fellow on the sound side. Occasionally the degree of the vibration-anæsthesia lessens progressively as the tuning-fork is moved away from the affected joint.

LEONARD J. KIDD.

- HÆMORRHAGE INTO THE SPINAL CORD.** E. W. BUCKLEY, *Med.*  
 (19) *Journ. Australia*, 1914, Oct. 24, p. 399.

A MAN, aged 36, married, was thrown from his trap and dragged some distance. He was unconscious for a short time, and on regaining consciousness found that he was paralysed in both legs. His left leg recovered early, and great pain developed in the back of the neck and between the shoulders. He had retention of urine, and could not sit up nor raise his head. Sensation of pain was interfered with on the left side. No fracture of the spine could be made out, although after three weeks a certain amount of callus formation was detected. He improved and became able to walk about without difficulty, but wasting of his supra- and infra-spinatus muscles developed with occasional shooting pains down to the little ring fingers on both hands. A hæmorrhage into the cord between the sixth and seventh cervical segments in the lateral column of the right side was diagnosed.

A. NINIAN BRUCE.

- INFLUENZAL MENINGITIS.** A. H. TEBBUTT, *Med. Journ. Australia*,  
 (20) 1914, i., Oct. 31, p. 415.

A MALE infant, aged 8 months, developed sickness and vomiting, and was brought to hospital in a semiconscious state. The eyes were open and staring, but not blind, and there was convergent strabismus of the left eye. The head was retracted, and the neck muscles were rigid. Kernig's sign was partially developed. There

was no history of any discharge from the ear. Only very little cerebro-spinal fluid could be withdrawn. It contained polymorphs, but no organisms could be seen in films. Cultures on blood-smear agar, however, gave numerous small colonies of bacilli, Gram-negative, and resembling the influenzal group. Similar organisms were found in the naso-pharyngeal discharge. Death took place thirteen days after the rigidity and eye symptoms were noticed.

A diffuse leptomeningitis was found over the vertex and base, and along the whole spinal cord. Thickish pus was withdrawn from the lateral ventricle, and no watery cerebro-spinal fluid was found in any situation, only a dry viscid layer on the surface of the spinal cord. The organism is described at some length. It was found to be markedly pathogenic to guinea-pigs, and to a monkey, causing a rapidly fatal septicæmia, although not introduced directly into the blood.

A. NINIAN BRUCE.

**A FATAL CASE OF MENINGITIS ASSOCIATED WITH AN IN-  
(21) FLUENZA-LIKE BACILLUS.** EVERITT ATKINSON, *Med. Journ. Australia*, 1914, i., Oct. 31, p. 421.

THIS case was aged 3 years and 10 months. He had been quite well until three days before admission to hospital, when he became irritable, listless, dull, and vomited. After admission he became restless, showed some rigidity of the neck muscles, but no coryza. There was internal strabismus of the left eye. The knee jerks were absent, and a typical infranuclear left facial paralysis was present. He became more irritable, Kernig's sign developed, together with marked rigidity of the neck, and spasticity of the arms and legs with occasional convulsions occurred. The cerebro-spinal fluid was turbid, under pressure, and contained polymorphs and Gram-negative bacilli. There was no autopsy. Cultures from the cerebro-spinal fluid showed long wavy filaments and twisted spirals. No animal experiments were made. It is suggested that some of the so-called leptothrix forms seen in cases of meningitis are in reality aberrant forms of Pfeiffer's bacillus of influenza.

A. NINIAN BRUCE.

**A CASE OF SEVERE MENINGITIS TREATED BY LUMBAR  
(22) PUNCTURE.** (Un cas de méningisme grave traité par la ponction lombaire.) MEYER, *Revue méd. de la Suisse rom.*, 1914, xxxiv., p. 685.

A SOLDIER, aged 35, was suddenly attacked with symptoms of meningitis. He remained in a semi-comatose condition for a week

until lumbar puncture was performed, which gave issue to a sterile fluid showing a pure lymphocytosis. Rapid recovery then ensued. The meningeal reaction is attributed to insolation.

J. D. ROLLESTON.

**TWO CASES OF OTITIC EXTRADURAL ABSCESS.** J. S. FRASER,  
(23) *Edinburgh Med. Journ.*, 1915, xiv., Jan., p. 38.

EXTRADURAL abscess is the commonest of the intracranial complications following suppurative otitis media. The following two cases show the symptoms that may arise from extradural abscess in the posterior fossa:—

*Case I.*—Boy, aged 7, had discharge from the right ear for several years following whooping-cough. A week before admission to hospital he complained of pain in the right ear, with no tinnitus or giddiness, but with drowsiness. The right external meatus contained pus. Lumbar puncture gave issue to a clear fluid under great tension. A radical mastoid operation was performed, and a large extradural perisinus abscess was found in the posterior fossa. Healthy red granulations were seen on the anterior wall. It was decided not to open the sinus or to ligature the jugular. The temperature rose to 104 next night (probably from septic absorption), and then fell. An uninterrupted recovery took place.

*Case II.*—Boy, aged 9, developed pain in both ears, with pain and stiffness in the neck. Both ears began to discharge, and a muco-purulent discharge was present in the right ear. Lumbar puncture yielded slightly turbid fluid under great tension. Nystagmus to left with drowsiness was present. The labyrinth was healthy. At operation the antrum was found to contain a little pus, and on removing the bone over the sigmoid sinus a large perisinus abscess was opened. The sinus wall showed healthy granulations. The boy made a complete recovery, in spite of the fact that he developed scarlet fever about a fortnight after the operation. The case appears to have been one of so-called "serous meningitis."

AUTHOR'S ABSTRACT.

**A CASE OF TEMPORO-SPHENOIDAL ABSCESS FOLLOWING  
(24) CHRONIC MIDDLE EAR SUPPURATION.** FRANK G.  
WRIGLEY, *Med. Chron.*, 1914, lx., Sept.-Oct., p. 10.

THE patient was a girl, aged 16, who complained only of temporal headache and copious discharge from the right ear. A radical mastoid operation was performed, and a loose necrotic piece of bone removed from the roof of the antrum. The discharge showed no signs of diminishing, and as pus was observed issuing through the opening in the roof of the antrum, a temporo-sphenoidal

abscess was diagnosed and drained. The operation was followed by almost complete disappearance of the headache. During two dressings two or three drams of cerebro-spinal fluid were observed to escape from the drainage tube. Recovery was complete in two months.

The absence of all symptoms of intracranial suppuration except pain was attributed to spontaneous, but incomplete, drainage having taken place through the roof of the antrum. The escape of cerebro-spinal fluid was considered to show that some communication with the lateral ventricle must have been present, which healed without infecting the contents of the ventricle.

A. NINIAN BRUCE.

**A CASE OF X-RAY DIAGNOSIS OF A CHRONIC CEREBRAL**  
(25) **ABSCCESS, SECONDARY TO FRONTAL SINUS SUPPURA-**  
**TION.** WILFRID GLEGG and HAROLD BLACK, *Lancet*, 1914,  
clxxxviii., Jan. 16, p. 124.

A MAN, who complained of pain, presented an inflammatory swelling in the upper part of the right orbit. This was incised, and a necrotic area was found through which a probe could be passed into the right frontal sinus. The entire anterior wall was accordingly removed, and also the mucous lining of the sinus. There was no sign of caries of the posterior wall. At a subsequent operation an area of carious and necrotic bone was found in the centre of the posterior wall of the sinus, and by its removal the dura was exposed. As a purulent discharge continued, it was attempted to discover its origin by use of Beck's bismuth paste. Radiograms showed that the bismuth paste had collected in the right frontal lobe of the cerebrum. The abscess was drained, and the patient recovered.

A. NINIAN BRUCE.

**EXTRAPYRAMIDAL HEMIPLEGIA.** ALFRED GORDON, *Med. Record*,  
(26) 1914, lxxxvi., Dec. 12, p. 1002.

A MAN, aged 25, had typhoid fever at the age of 8. Before his temperature began to fall he had an apoplectic seizure with loss of consciousness. He became hemiplegic on the left side and aphasic. The aphasia lasted several months, the hemiplegia remained. A year later he developed ataxic movements of the left arm, and contracture of the fingers of the same hand. Last May he presented the following condition—left hemiplegia with face drawn a little to the left, the left foot being kept in a state of marked contracture. There is no distinct rigidity of various segments of the left arm and leg, as on passive movements resistance is easily and promptly overcome. The hand is always in a state

of extreme contracture. The shoulder and left arm present involuntary movements, and associated movements are observed on the entire left side, including face and neck, whenever a passive movement is brought on in any portion of the left side. The patellar reflexes are increased especially on the left side. There is no ankle clonus, no Babinski and no Oppenheim. Sensation is normal everywhere. Wassermann reaction negative.

The author points out that the hemiplegia was undoubtedly organic, but the absence of true paralysis, of ankle clonus and of Babinski's sign, together with the absence of marked contractures in the joints of the arm and leg, and of the characteristic resistance on passive movement along with the occasional presence of hypotonia, associated movements, and other points, rather seem to indicate an extrapyramidal condition and probably the result of a unilateral lesion in one corpus striatum.

A. NINIAN BRUCE.

**A CASE OF SUDDEN DEMENTIA, FROM MASSIVE CEREBRAL**  
(27) **GLIOMA OF UNUSUAL NATURE.** JOHN A. L. WALLACE and  
OLIVER LATHAM, *Med. Journ. Australia*, 1914, i., Nov. 28, p. 516.

A MAN, aged 28, single, bright, cheerful and industrious, had always been in perfect health until fourteen days before removal to hospital, when he became morose, silent, refused to work, and remained in bed. He then became demented, could not understand questions, and took no interest in himself. In hospital his mental symptoms progressed, and he became physically weaker, dying four weeks after the onset of acute symptoms. Lumbar puncture gave issue to fluid under slight pressure with no lymphocytosis, and both the fluid and the blood serum gave a negative Wassermann reaction.

On removal of the brain, the left hemisphere seemed larger than the right. After hardening, a section showed a dense growth extending from the grey matter of the frontal lobe to within  $1\frac{1}{2}$  in. of the occipital pole, and from the mid line to the grey matter of the ascending frontal convolution,  $1\frac{1}{2}$  in. deep. It was considered to be a "giant-celled glioma." The paper concludes with a discussion of gliomata.

A. NINIAN BRUCE.

**CYST OF THE CEREBELLO-PONTINE ANGLE; OPERATION,**  
(28) **WITH RELIEF OF SYMPTOMS.** C. L. DANA and CHAS. A.  
ELSBURG, *Med. Record*, 1914, lxxxvi., Dec. 19, p. 1050.

A MAN, aged 34, previously well, began to suffer from severe headaches with attacks of violent vomiting. There gradually developed attacks of vertigo and forced movements to the right,

tinnitus and deafness in the right ear, unsteadiness of gait with tendency to fall to the right, clumsiness and asynergia of the right hand, progressively diminishing vision, double optic neuritis, nystagmus more to the right than to the left, slight paralysis of the right seventh, and slight anæsthesia of the right fifth, and bone deafness in the right ear with involvement of the auditory nerve. The Wassermann reaction was negative.

A suboccipital craniotomy was performed, the bone being removed over both cerebellar hemispheres into the foramen magnum and later in both mastoid regions. Eight days later the dura was incised, and marked bulging of the right cerebellar hemisphere resulted. A large multilocular cystic mass with thin walls was found in the right cerebello-pontine angle bulging outward and backward. On puncturing it, about 50 c.c. of clear yellow fluid escaped. Convalescence from the operation was uneventful, the symptoms all disappearing.

A. NINIAN BRUCE.

**PROGRESSIVE LENTICULAR DEGENERATION.** C. E. NAMMACK, (29) *Med. Record*, 1914, lxxxvi., Dec. 12, p. 997.

A CASE is here described in a boy aged 20. The first symptoms occurred at the age of 5, before he went to school, and consisted in tremor of his left hand and turning in of his right leg, making walking difficult. These symptoms grew worse and his speech became nasal. His movements became difficult to start, he often found walking backwards easier than forwards, and his temper became worse. His facial expression is now fixed, the mouth being large and drawn, and when doing anything he protrudes his tongue. He understands everything that is said to him, and enjoys laughter and amusing books. His intelligence seems to be about that of a boy of 12-13 years. When he smiles it comes slowly and remains longer than is usual in a normal person. The results of the physical examination are recorded, the liver not being palpable and the left Babinski reflex doubtful. The Wassermann test was repeatedly negative.

A. NINIAN BRUCE.

**POTT'S DISEASE IN CHILDHOOD. INFANTILISM. SCLEROTIC**  
(30) **POLYGLANDULAR DYSTROPHY PROBABLY OF TUBERCULOUS ORIGIN.** (Mal de Pott survenu dans l'enfance. Infantilisme, dystrophie scléreuse polyglandulaire vraisemblablement d'origine tuberculeuse.) A. SIREDEY and H. LEMAIRE, *Bull. et Mém. Soc. méd. Hôp. de Paris*, 1914, xxxviii., p. 341.

A WOMAN, aged 28, who had had Pott's disease at 5, and was the subject of chronic pulmonary tuberculosis, presented all the

features of Lorain's type of infantilism. Death was due to cachexia. The autopsy showed well-marked aplasia of the genital organs and sclerotic changes in the thyroid, hypophysis, suprarenals, ovaries, and kidneys. The authors regard the case as one of the diffuse forms of fibrous tuberculosis of toxæmic type which have been described by Poncet. J. D. ROLLESTON.

**NERVOUS CRETINISM.** Major R. M'CARRISON, *Brit. Journ. Child* (31) *Dis.*, 1914, xi., p. 508.

NERVOUS cretinism is a combination of cretinism with congenital cerebral diplegia first described by the author in 1908 (*v. Review*, 1909, vii., p. 57). In the present paper he shows the comparative frequency of this type of cretinism and the necessity for its early recognition, and attributes both the nervous and cretinoid symptoms to thyro-parathyroid deficiency. J. D. ROLLESTON.

**A CASE OF ACROMEGALY, ASSOCIATED WITH GLYCOSURIA.** (32) W. ROY BLORE, *Med. Chron.*, 1914, lx., Nov., p. 92.

THE patient was a woman, aged 52, who appears to have been an acromegalic for eight years. The eyes showed no changes, but the bony changes were marked, and were accompanied by excessive perspiration and polyuria. The glycosuria was of the purely alimentary type. A skiagram showed an enlarged sella turcica, and she appears to be passing into a condition of hypopituitarism. A. NINIAN BRUCE.

**MENTAL AND NERVOUS DISORDERS ASSOCIATED WITH** (33) **PELLAGRA.** H. DOUGLAS SINGER, *Archives of Intern. Med.*, 1914, xv., pp. 121-146.

THE types of mental disorder associated with pellagra may be grouped as follows:—

I. *Disorders Directly due to the Pellagra Toxin.*—(a) Symptomatic depressions; (b) Delirious pictures.

II. *Disorders Based on Peculiarities in Personal Make-up, the "Attack of Insanity" being Precipitated by Pellagra.*—(a) Manic-depressive disorders; (b) Hysteria; (c) Psychasthenia; (d) Dementia præcox; (e) Paranoic developments.

III. *Disorders due to Definite Brain Changes with Pellagra merely as a Complication.*—(a) Arteriosclerotic dementia; (b) Senile dementia; (c) Presenile psychoses; (d) General paralysis of the insane.

Mental disturbance occurs in about 40 per cent. of all cases of

pellagra. Such disturbances are more frequent with repeated attacks. Children are practically exempt. They are most common in men between 21 and 40, and women about 41 to 60. About 95 per cent. of the mental disorders are the direct result of the pellagrous intoxication, and although the mortality in such cases is much higher than in cases without such disorder, yet the mental disturbance will fully recover if the patient survives. The remaining 5 per cent. are examples of mental disorder primarily dependent on the individual's make-up, or else are merely concomitant. Faulty nervous organisation, including inadequate mental adaptability, seems to be associated with a predisposition to pellagra. This seems to afford the most satisfactory, if only partial, explanation of the extraordinary frequency of pellagra arising among the insane, and the increased frequency of functional psychoses and psychoneuroses and of nervous disease of the congenital anomaly type among pellagrins as compared with more normal individuals. Chronic "insanity" due strictly to pellagrous intoxication, if it occurs, is rare. Chronic nervous disease as the result of pellagra, if it occurs, is exceptional.

A. NINIAN BRUCE.

**FURTHER OBSERVATIONS ON THE BLOOD-COUNT IN PELLAGRA.** OLIVER S. HILLMAN and PAUL A. SCHULE, *Archives of Intern. Med.*, 1914, xv., pp. 147-149.

THE differential leucocyte count is given in a series of forty-six pellagrins, together with the total leucocyte count and a few remarks on the nature of the attack. The only change at all constant was a lymphocytosis, which does not seem to bear any relation to the severity or chronicity of the attack. The small lymphocyte with relatively little cytoplasm is the most common type of lymphocyte found.

A. NINIAN BRUCE.

**STATISTICS OF PELLAGRA IN SPARTANBURG COUNTY, S.C., INCLUDING GEOGRAPHICAL DISTRIBUTION OF THE DISEASE AND ITS RELATION TO RACE, AGE, SEX, AND OCCUPATION.** J. F. SILER, P. E. GARRISON, and W. J. MACNEAL, *Archives of Intern. Med.*, 1914, xv., pp. 98-119.

THE distribution was found to be uneven, the morbidity being much higher in and near the large centres of population, and especially in the cotton-mill villages. It was found to be about three times more prevalent in the white race than in the negro population. Women between 20 and 44 years of age have been most subject to pellagra, as also children between 2 and 10 years,



of both sexes, and old people. It was very rare under 2 years of age. In children it is relatively benign. No direct relation of occupation to pellagra morbidity was discovered, but proximity to, or association with, pellagrins seems to be important.

A. NINIAN BRUCE.

- THE FIXATION OF ARSENIC BY THE BRAIN AFTER INTRA-  
(36) VENOUS INJECTIONS OF SALVARSAN.** JAMES M'INTOSH  
and PAUL FILDES, *Proc. Roy. Soc.*, 1914, lxxxviii., Series B., p. 320.

AFTER intravenous injections of salvarsan and neosalvarsan in man and animals no arsenic can be found in the brain. This phenomenon is not due to a lack of affinity between the brain and the drugs, but to an inability on the part of the drugs to penetrate into the substance of the brain. Fixation of arsenic by the brain occurs as readily as by the liver, as shown by experiments *in vitro* and the toxic effects of intrathecal injections. Penetration of neosalvarsan into the brain cannot be obtained even by frequently repeated intravenous injections.

A. NINIAN BRUCE.

- ON THE ALBUMINO-CYTOLOGICAL DISSOCIATION OF THE  
(37) CEREBRO-SPINAL FLUID IN OTHER DISEASES THAN  
SYPHILIS.** (Sur la dissociation albumino-cytologique du liquide  
céphalo-rachidien dans d'autres maladies que la syphilis.)  
A. A. BABES, *Compt. Rend. Soc. de Biol.*, 1914, lxxvii., p. 447.

BABES examined the cerebro-spinal fluid in patients with nervous and mental disease in whom Wassermann's reaction was negative both in the blood and cerebro-spinal fluid. He found this dissociation, i.e., excess of albumin without leucocytosis, constant in dementia præcox, idiots, and imbeciles, frequent in alcoholism, less frequent in epilepsy, and present in isolated cases of chorea, paralysis, and pseudobulbar paralysis.

He concludes that the dissociation has not the value in the diagnosis of syphilis attributed to it by Bloch and Vernes (*v. Review*, 1914, xii., p. 271).

J. D. ROLLESTON.

- EXPERIENCE WITH THE LANGE COLLOIDAL GOLD TEST IN  
(38) 135 CEREBRO-SPINAL FLUIDS.** H. C. SOLOMON, *Boston Med.  
and Surg. Journ.*, 1914, clxxi., Dec. 10, p. 886.

THE test (*v. Review*, 1914, xii., p. 319) requires very small quantities of fluid, is rapid, easy, and cheap, but must be done with great care. Paresis gives very typical reactions, but cases of undoubted paresis may give atypical reactions, and cases not paresis may give the type reaction. Tabes gives a different reaction from paresis,

but it is not in itself diagnostic of tabes. It is of no certain value in cases of congenital syphilis showing no other signs of central nervous system involvement. It would seem to offer a differentiation of tubercular meningitis, and is here at times more valuable than any other test. It is a most valuable and important addition to laboratory diagnosis.

A. NINIAN BRUCE.

**THE AMOUNT OF CHLORIDES IN THE CEREBRO-SPINAL (39) FLUID AND EXUDATIONS.** (*La teneur en chlorures du liquide céphalo-rachidien et des transudats.*) A. A. BABES, *Compt. Rend. Soc. de Biol.*, 1914, lxxvii., p. 448.

CHEMICALLY the cerebro-spinal fluid and exudations closely resemble one another. The chemical substances in the two fluids are derived from and are less abundant than those in the blood. The chlorides alone are an exception. From an examination of seven patients Babes found that the amount of chlorides in the exudations (plural and ascitic fluids) and cerebro-spinal fluid was always greater than in the blood.

J. D. ROLLESTON.

**TWO CASES OF SEVERE TETANUS CURED BY COMBINATION (40) OF ANTI-TETANIC SERUM, CHLORAL, MORPHINE OR LAUDANUM, AND SUBCUTANEOUS INJECTIONS OF CARBOLIC ACID SOLUTION IN LARGE DOSES.** (*Deux cas de tétanos guéris par une médication combinée de sérum antitétanique, de chloral, de morphine ou de laudanum et d'injections sous-cutanées d'eau phéniquée à hautes doses.*) E. DE MASFARY, *Bull. et Mém. Soc. méd. Hôp. de Paris*, 1914, xxxviii., p. 367.

A RECORD of two cases in wounded soldiers whose recovery is attributed chiefly to the use of Baccelli's method of subcutaneous injections of carbolic acid solution. A watery solution of 3 per cent. sterilised at 100° C. was used, and seven or eight injections made in the twenty-four hours. Although the first patient received as much as 7.95 g. of carbolic acid in thirteen days, and the second 9.20 g. in nine days, no bad results were due to these large doses.

J. D. ROLLESTON.

**HYPODERMIC INJECTIONS OF OXYGEN IN TETANUS. (41) (Injections hypodermiques d'oxygène dans le traitement du tétanos.)** L. LÉGER, *Comp. Rend. Soc. de Biol.*, 1915, lxxviii., p. 3.

THE usual methods of treating tetanus, including the serum, having too often failed the writer, he has tried hypodermic injections of oxygen gas in three cases, two of which were seem-

ingly hopeless: the result was that the alarming symptoms improved and recovery followed. In the absence of any special apparatus, he used a hypodermic needle attached to a rubber tube connected with an oxygen balloon, great care being taken to avoid gaseous embolism; but he advises the use, whenever possible, of a special oxygenator, such as those of Bayeux or of Martinet and Heckel (that of Martinet seems to be the most widely used in France, where the method was introduced in 1910). Léger points out that this treatment seems to be indicated in tetanus on theoretical grounds, for (1) the tetanus bacillus is anaerobic; (2) asphyxial symptoms often predominate in the terminal stage of tetanus; (3) hypodermically injected oxygen acts beneficially on respiration, circulation, and cell-nutrition, as we have learnt from Ramond (1910); and (4) it is well borne in conditions of great debility.

LEONARD J. KIDD.

#### **PERMANGANATES IN SLOUGHING AND TETANUS-INFECTED**

(42) **WOUNDS.** Lieut.-Col. Sir L. ROGERS, *Brit. Med. Journ.*, 1914, Dec. 19, p. 1055.

THE use of strong permanganate solutions, not less than 1 in 500, is recommended for irrigating all dust and earth-infected wounds, especially in the field. The permanganates may act by oxidizing the toxin, and thus rendering the tetanus and other spores easier to destroy by phagocytes.

A. NINIAN BRUCE.

#### **PSYCHIATRY.**

**INTROSPECTION IN DEMENTIA PRÆCOX.** EDWIN G. BORING, (43) *American Journ. Psychol.*, 1913, April.

THE writer examined the introspective reports made by eight cases of dementia præcox in learning the pencil mazes (M and N), and used as controls three observers trained in introspection as well as two untrained boys. He found out that persons with dementia præcox can, under experimental conditions and without prolonged special training, give reports indicating the general trend of consciousness, but the reports are, on the whole, of about that degree of reliability found in the reports made by untrained observers with little education and a poor command of language, the only difference being the tendency of the dementia præcox patient to introduce irrelevant material.

H. DE M. ALEXANDER.

- ON THE CLINICAL RELATIONS BETWEEN EPILEPSY AND SCHIZOPHRENIA.** (Ueber klinische Beziehungen zwischen Epilepsie und Schizophrenie. Epilepsie als Frühsymptom oder als Kombination.) H. CIESE (of Haina), *Ztschr. f. die ges. Neurol. u. Psychiat.*, 1914, xxvi, H. 1, July.

OUT of 347 cases of schizophrenia (dementia præcox) in 63·4 per cent. the author found in childhood evidence of some neurotic or mental anomalies. Most of these anomalies were to be considered early symptoms of schizophrenia. Many cases of imbecility were doubtful in this respect; some anomalies were to be referred to spasmophilia, which in many cases leads to a constitutional neurotic inferiority. All epileptic symptoms in the early history of a schizophrenic are not necessarily to be referred to the schizophrenia; 8 to 9 per cent. of the author's material had in childhood convulsions of some kind or another; two-thirds of these were to be referred to spasmophilia. In those schizophrenics with a history of childhood convulsions, convulsions during the actual disorder were no more common than in other cases.

In order to assume a combination of schizophrenia and epilepsy there must be a certain independence of the individual phases of the whole clinical picture. Several facts point towards just such a combination. There is a close relationship between spasmophilia, epilepsy, schizophrenia. Where both disorders set in together, or the epilepsy occurs after the schizophrenia, a combination can only be thought of if the epilepsy can be definitely related to exogenous causes. Otherwise the epilepsy must be regarded as a symptom of schizophrenia.

The author discusses the features in such a combination of psychoses which can be referred to the individual processes. He publishes in detail the histories of the six cases on which his conclusions are based.

C. MACFIE CAMPBELL.

- MENTAL TESTS IN DEMENTIA.** BERNARD HART and C. SPEARMAN, (45) *Journ. Abnorm. Psychol.*, 1914, ix., Oct.-Nov., p. 217.

THE authors are of the opinion that the main defect in dementia is a diffuse one, and arises from the impairment of the reinforcing effect of the entire cortex upon the carrying out of any intellectual performance, though that performance also depends on the integrity of the particular region or characteristic of the cortex which is the direct substratum of the specific act. Hence the authors' results appear incompatible with the current view that dementia exists in large "defects," such as "faulty judgment," "disturbed association," "poverty of ideas," "loss of memory," &c.; because the inequality between the powers of the same person for different

kinds of performance does not appear to be appreciably greater in insanity than in health, nor in one of the forms of insanity tested than in another.

The elaborate investigation carried out by the authors is detailed in this contribution, and does not lend itself to abstraction.

H. DE M. ALEXANDER.

**RESULTS OF EXAMINATION OF THE BLOOD BY ABDER-**

- (46) **HALDEN'S METHOD.** (*Erfahrungen mit der Abderhaldenschen Blutuntersuchungsmethode.*) E. SCHWARZ (of Berlin), *Monatsschr. f. Neurol. u. Psychiat.*, 1914, xxxvi., H. 1, July.

THE blood serum of 145 patients was examined, partly in Abderhalden's laboratory in Halle, in order to see whether the method of Abderhalden was of use with regard to the diagnosis and the ætiological interpretation of the psychoses. Notwithstanding the fact that the author paid rigorous attention to technique, errors in which have been so frequently made responsible for divergence in results, he comes to the conclusion that no conclusion of any kind can be drawn from the results of this method either as to the diagnosis or the etiology of the psychoses.

C. MACFIE CAMPBELL.

**ON THE CLINICAL VALUE OF THE ABDERHALDEN DIALYSIS**

- (47) **METHOD IN PSYCHIATRY.** (*Zur Frage der klinischen Verwertbarkeit des Abderhaldenschen Dialysierverfahrens in der Psychiatrie.*) ST. ROSENTAL and W. HILFFERT (of Heidelberg) *Ztschr. f. d. ges. Neurol. u. Psychiat.*, 1914, xxvi., H. 1, July.

THE demonstration of defence ferments in the blood by the dialysis method of Abderhalden has been applied to psychiatry, and interesting results in relation to dementia præcox have been published. Fauser concluded that in dementia præcox specific ferments against cerebral cortex and the gonads are produced, more rarely ferments against thyroid. The authors of the present communication at first found results which in a gratifying manner confirmed the results of Fauser. The suspiciously frequent positive results were found in part to be due to faulty technique, and the whole subject was taken up anew with more rigorous technique. In view of the variable permeability of the membranes for peptone, each experiment was conducted in duplicate; the double experiment often gave contradictory results. A further difficulty lay in the fact that divergent results were obtained with the same organ obtained from different sources. In order to be as objective as possible a definite colour scale was arranged, and the results noted in relation to it without reference to the rest of the experiment.

The problem investigated was the possibility of differentiating dementia præcox from the non-schizophrenic conditions, and from the definitely organic dementias. All the tests were made with at least three organs, brain, thyroid, gonad. The authors found in a large percentage of the cases that the reading was doubtful. Of 38 male cases of dementia præcox, 26 cases were positive with at least one organ; only 4 of these gave positive results with all three organs. Of the 24 women, 17 cases were positive with at least one organ, 6 were positive with all three organs. Of 10 manic-depressive men, none was completely positive; of the 10 manic-depressive women, no single case gave a negative result to all three organs. The authors therefore do not confirm the results of Fauser; they mention that Meyer, whose early results confirmed those of Fauser in a later series of cases of dementia præcox, got a negative result in 23 per cent. Their conclusion is, that at the present time there are no sound grounds for drawing diagnostic conclusions from the serological results of the Abderhalden method.

C. MACFIE CAMPBELL.

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## Reviews

**THE UNCONSCIOUS.** The fundamentals of human personality, (48) normal and abnormal. MORTON PRINCE. Pp. xii. + 549. 1914. The Macmillan Co., New York. Pr. 8s. 6d. net.

"THIS work is designed to be an introduction to abnormal psychology. The problems considered, however, belong equally to normal psychology in that they are problems of psychophysiological functions and mechanisms." It consists of selected lectures from courses on abnormal psychology delivered at the Tuft's College Medical School, and later at the University of California. The lecture form has been retained and four additional lectures have been added, making sixteen in all.

The term "unconscious" has come into such general use now, and so many different meanings have been attached to it by different writers, that considerable confusion of thought has arisen in consequence. The author here uses the term in the following sense. The subconscious is a theory based upon observed facts, and formulated to explain those facts. It may be divided into two classes: (1) the *unconscious*, or neural dispositions and processes; and (2) the *coconscious*, or actual subconscious ideas which do not

enter the content of conscious awareness. "An unconscious process and a coconscious process are both therefore *subconscious* processes but particular types thereof, the one being purely neural or physical, and the other psychological or ideational." Whatever may be the exact nature of the theoretical alterations left in the brain by life's experiences, and however these brain processes corresponding to thoughts and other mental experiences may be recorded and conceived, it is convenient to have a word to characterise these brain records, and the word *neurogram* is suggested. These thus acquire a functional unity and may become compounded into larger functioning groups or complexes, and still larger systems. Whether their origin is remembered or not, they become a part of the personality. Such complexes and systems play an important part by determining mental and bodily behaviour and tend to decide points of view, attitudes of mind, and so on. When such complexes have strong emotional tones they set up conflicts resulting in contraction and even disruption of the personality. Personality, therefore, is a complex affair, since many factors, some acquired and others innate, enter into its make-up. Each of these is capable of more or less autonomy, and upon their harmonious co-operation depends largely the successful adaptation of the personality to its environment. In this book the principal factors of personality are analysed and explained, more especially those which are concerned in the disturbances studied under general psychopathology. "Such a study should be undertaken preparatory to that of special pathology or particular complexes of disturbances of function (the psychoneuroses). The aim of psychology should be to become capable of being an applied science. So far as a science is only of academic interest it fails to be of real value to the world." As those lectures have been originally written for students, great care has been taken that every statement should be clear and easily understood, and as an introduction to this increasing important study, we consider this book in every way excellent.

**SEROLOGY OF NERVOUS AND MENTAL DISEASES.** D. M. (49) KAPLAN. Pp. 346, and 32 figs. W. B. Saunders Co., Philadelphia and London. 1914. Pr. 15s. net.

THE importance of an examination of the cerebro-spinal fluid in nervous and mental diseases is now beyond dispute, and has led to the publication of many valuable papers during recent years. These are, however, scattered amongst so many different periodicals, that it is particularly desirable they should be collected together and a careful and accurate account written, summing up the present

stage of our knowledge on this subject. This has been the aim of this monograph, and the result has been very successful. Some idea of the number of original papers analysed may be gathered from the fact that the bibliography at the end of the book consists of seventy pages, and does not attempt to give even a partial review of the literature on salvarsan and neosalvarsan.

The book is divided into four parts. The first part deals with technology, the second with the serology of nervous and mental diseases of non-luetic origin, the third with the serology of nervous and mental diseases of luetic origin, while the fourth deals with the therapeutic use of salvarsan.

Cerebro-spinal fluid was first withdrawn from a patient in 1885, but it was not until 1891 that Quincke published his paper on the technique of lumbar puncture and on the study of the cerebro-spinal fluid. The book opens with a description of the operation of lumbar puncture followed by the physical and chemical properties of the cerebro-spinal fluid and the different methods which have been devised for its examination. After this the Wassermann reaction is discussed, explained, and interpreted. In the author's experience the unerring positive result is always accompanied by a long list of positive reports on distinctly non-syphilitic patients. He points out that the function of the laboratory is not to diagnose syphilis, but to report the results of test-tube experiments which have only a certain amount of specificity. It is recommended that every attempt should be made to negative sera, and only when this is impossible should a positive report be given. By assuming this attitude the author has been able to reduce the error to 0.3 per cent. The performance of the reaction and the various modifications are well described.

The serology of non-syphilitic nervous and mental diseases is next described, the "average formula" for each condition being given. In the serology of the luetic nervous and mental diseases special stress is laid upon phenomena that have proved of use for diagnosis, prognosis and treatment, and an account is given of the author's findings with the Lange gold chloride curve, which, although constantly present in general paresis, is not characteristic of syphilis of the nervous system as a whole, and is not given by tabes or cerebro-spinal syphilis.

Part IV. gives us a short description of the history of the development of salvarsan and neosalvarsan, and their application to the treatment of syphilis, the description being essentially practical. The use of mercury in addition is emphasised together with the fact that the cure of syphilis cannot be guaranteed, the most which can be accomplished being an amelioration of its active manifestations. In the removal of these active mani-



festations a full serological investigation is necessary, and we can recommend this book as a good and full practical exposition of the subject.

**MENTALLY DEFECTIVE CHILDREN.** By ALFRED BINET and TH. (50) SIMON, M.D. Authorised Translation by W. B. DRUMMOND, M.B., C.M., F.R.C.P.(Edin.), with an Appendix containing the Binet-Simon Tests of Intelligence by MARGARET DRUMMOND, M.A., and an Introduction by Professor ALEXANDER DARROCH. Pp. 180. Edwin Arnold, London. 1914. Pr. 2s. 6d. net.

DR DRUMMOND'S excellent translation of Binet and Simon's classic work on mentally defective children comes at an appropriate time, when public local authorities have been entrusted with new responsibility in the selection and education of these children, and when, accordingly, there is need for more than usual wisdom and care in the task. The authors of the book are recognised as having devoted years to the elaboration of the principles on which they have acted in the determination of what constitutes a mentally defective child. They state plainly that "empiricism has had its day, and methods of scientific precision must be introduced into all educational work." How far this precision may go the reader of this interesting little volume will speedily grasp. MM. Binet and Simon have enunciated practical definitions, based on scientific observation, of the idiot, the imbecile, and the feeble-minded, respectively, and they have devised a scheme for the investigation, along scientific lines, of the mental status of the individual child, *i.e.*, the child in whom the teacher or the parent recognises some defect. In Miss Drummond's valuable appendix those interested will find the complete Binet-Simon tests of 1911 explained and discussed by one who has obviously had much experience in their application. In his introduction Professor Darroch says that the problem of selecting abnormal or defective children who are not sufficiently good for the ordinary school, nor yet sufficiently bad to be classed as idiots or imbeciles, and the allied problem of devising courses of education and training tending to utilise what is good in these cases, are of first-rate present day importance. In the volume here reviewed we have a basis for the practical working out of these problems such as has not hitherto been offered, and we hasten to recommend all who may still be ignorant of MM. Binet and Simon's investigations to make themselves familiar with their results, through the medium of this readable and up-to-date edition of a work which is admitted to have appreciably widened the field of research in its particular subject.

S. A. K. W.

**LEARNING IN DEMENTIA PRÆCOX.** EDWIN G. BORING, *Psychol.*  
(51) *Review Publications*, 1913, xv., No. 2.

THIS monograph considers the formation, under experimental conditions, of certain habits in cases of dementia præcox; aims to investigate the acquisition of motor skill in both simple and complex operations; and attempts, in three respects, to supplement the conclusions of Kent in his study of "Habit Formation in Dementia Præcox."

Firstly, the subjects were given a large number of preliminary and supplementary tests in order that the individual mental characteristics of each subject should be more correctly known. Secondly, a systematic effort was made throughout all the tests of learning to train the subjects to give introspective reports of consciousness during the course of learning. Finally, the study was concluded by the learning of a practical industrial operation.

Although the results of the author's investigations were not on the whole encouraging, seeing that only one out of the eight cases of dementia præcox investigated showed decided improvement of an unquestionable nature; yet this monograph is a valuable contribution, on account of the extremely lucid and detailed manner in which the various tests are described, thus rendering it extremely useful as a work of reference to those who are desirous of following up this line of research.

H. DE M. ALEXANDER.

**DIE OPERATIVEN ERFOLGE BEI DER BEHANDLUNG DES**  
(52) **MOEBUS BASEDOWII.** San.-Rat. Dr OTTO KLINKE. Pp. 112.  
1914. S. Karger, Berlin. Pr. M. 4.

IN this brochure the author collects some 6,700 cases of operation on the thyroid gland in exophthalmic goitre, reported in the literature of the latter half of last century, and down to 1910. In some 500 of these the ultimate result is not known. Deaths and other mishaps account for some 500 more, but of the total he calculates that 20 to 25 per cent. may be described as cured, and 60 to 70 per cent. improved. The total mortality is less than 4 per cent. He is of the opinion that surgical procedure will be resorted to less and less as our knowledge of the disease and of the functions and lesions of the ductless glands increases. There is a bibliography of some 1,100 references to the literature from the year 1859.

S. A. K. W.

# Review of Neurology and Psychiatry

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## Original Articles

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### PARALYSIS OF THE SPINAL ACCESSORY NERVE FOLLOWING MANY YEARS AFTER THE RE- MOVAL OF TUBERCULOUS GLANDS FROM THE NECK.

By A. NINIAN BRUCE, M.D., D.Sc., EDINBURGH.

(With Plates 1 and 2.)

THE following two cases are of special interest on account of the fact that the paralysis of the trapezius followed a large number of years after the removal of tuberculous glands from the neck. In the first case the paralysis was *bilateral*, both trapezii being involved. Ten years previously tuberculous glands had been removed from one side of the neck, and some years later from the other side. In the second case, the condition was *unilateral*, tuberculous glands having only developed upon the right side. They had been removed by operation fourteen years previous to the time that the paralysis came under observation.

The first case was that of a man (R. Y.), aged 21, married, and a rubber worker. He presented himself at the Medical Out-patient Department of the Royal Infirmary, Edinburgh, on account of two patches of alopecia areata on his head, and incidentally asked for advice for a very bad cough which had become much worse during the last three or four months. He was about

5 ft. 7½ in. in height, and weighed about 8 st. 7½ lbs. On being questioned he stated that he had been getting much thinner recently, but his cough, although most unpleasant and painful, had never been severe enough to compel him to cease work. On examining his chest the marked drooping of both shoulders was noticed, and he was admitted to the ward.

He stated that when he was about 10 years of age the glands on the left side of his neck began to swell, and were removed by operation the following year. Eighteen months later, the glands on the right side of the neck became swollen, and one suppurated for several months. Finally, when he was 15 years of age, they were also removed. Both wounds healed perfectly by first intention, and no further trouble had since arisen in this region.

He had remained in good health from that time onwards, except for an attack of influenza of a mild type, until the present cough developed some months previously.

His work at the rubber mills consisted chiefly in lifting large bales and extended from 8 A.M. to 6 P.M., with one hour off in the middle of the day for meals. Three months before admission, however, he found he was becoming unable to lift the bales so easily on account of weakness in the shoulders, which he thought was slowly increasing. Besides this he was very musical, and found employment ever since he was a boy by singing in choirs and at private concerts. About a year previous to his admission to hospital he had won a prize in a public vocal competition, but he considered the mental strain involved had been too much for him because he had never felt really well since then. In spite of this, however, he often appeared on the variety stage and at smoking concerts. At the latter he smoked a great deal, and once or twice took more alcohol than was quite good for him. The combination of work during the day and in the evening overtaxed his strength, and he began to develop pain behind the sternum and on the left side of the chest, accompanied by a dry, unpleasant cough. He noticed at this time that he was losing weight slowly but steadily, and that he caught cold easily. Sudden exertion was apt to cause breathlessness, he lost his sleep, and the cough became worse and was accompanied by a considerable amount of sputum. During the six months before admission, he had lost a little over one stone in weight. The real reason why he came to the hospital, however, was on account of two patches of

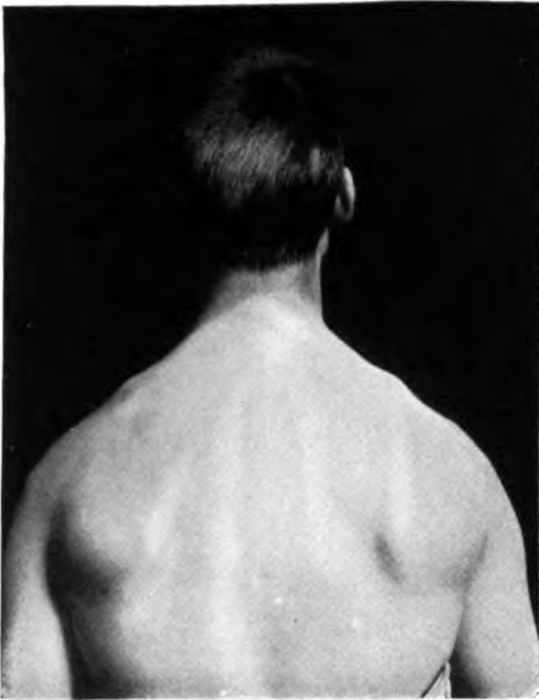


FIG. 1.—*Case 1.* Back View. Natural position of shoulders.

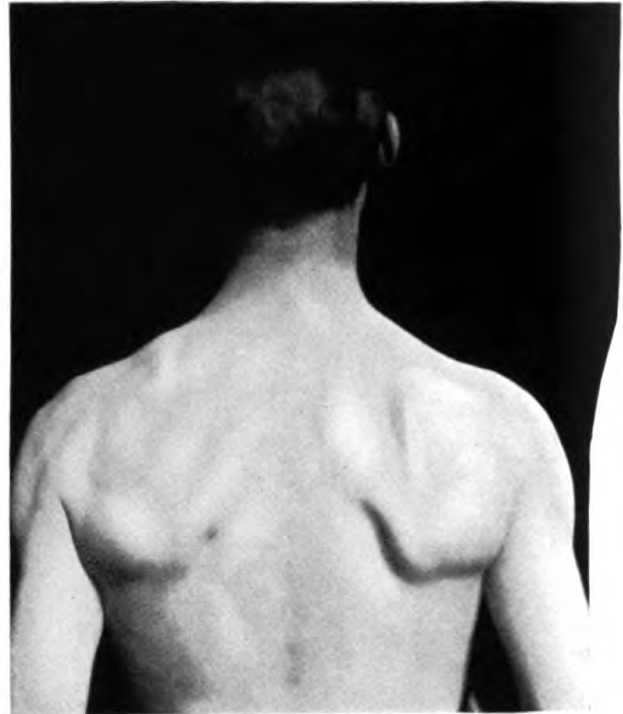


FIG. 2.—*Case 1* Shoulders held braced back.



FIG. 3.—*Case 1.* Front View. Arms hanging in natural position.

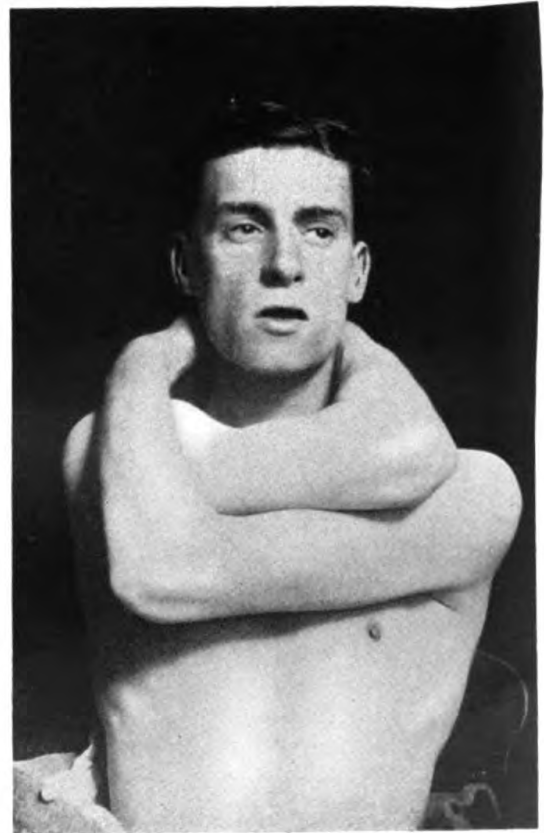


FIG. 4.—*Case 1.* To illustrate a "trick" patient had. The little fingers were linked together, then the arms adducted so that the elbows completely crossed to the opposite side. The head was then put through the interval between the posterior surfaces of the forearms.



alopecia areata which had developed on his head, and while there he had mentioned his feeling of general weakness and cough, and was sent to the medical wards, when the above condition was discovered. His family history showed nothing of importance. His mother and father were still alive and healthy. He had married at the age of 18, and had always lived in comfortable surroundings. He was only a moderate smoker, and although he did not drink regularly, was liable to take too much at times.

*Condition on Examination.*—Patient was a rather thin man, and showed extensive scars on both sides of the neck and under the chin. There were two large patches of alopecia areata on the scalp, on which the hair was beginning to grow again.

*Muscular System.*—The facial muscles show nothing abnormal. He can raise both his eyebrows properly, and shut both lids strongly. He can frown, whistle, and show his teeth easily. On chewing, the masseters and temporal muscles could be felt to contract strongly, and the power of movement against resistance is unimpaired.

There was marked hollowing of the supraclavicular fossæ. Both sterno-mastoids stand out prominently and contract well, but they appear to be somewhat atrophied.

The trapezius on each side is greatly atrophied, and is represented above the scapula by only thin sheets of muscle. There are no fibrillary tremors. The shoulders droop greatly (see Fig. 1), being drawn forwards and downwards; the scapulæ are displaced outwards and downwards, and the clavicles form a perfectly straight horizontal line instead of running upwards and backwards. Further there is marked hollowing above the clavicles, and on the back the vertebral border of the scapula is prominent and the inferior angle is displaced inwards. The patient is unable to shrug his shoulders without pain, and cannot hold them up for any length of time. The arms can be abducted to a right angle, but there is slight pain and tiredness, and they cannot be held in this position long. The arms can be lifted above the head, but only for a short time. The power of the shoulder movements is fair, and that of the elbow movements unimpaired.

He is also able to perform a curious "trick." The little fingers are linked together, the arms are then adducted so that the elbows cross to the opposite sides, and the head is then pushed through the intervals between the posterior surfaces of the forearms as shown in the accompanying figure (Fig. 4).

The deltoid, biceps and triceps muscles are unaffected as well as the pectorals, levator anguli scapulæ, and rhomboids (Figs. 2 and 5).

The abdominal and leg muscles exhibit nothing abnormal.

The abdominal reflexes are all present, the knee and ankle jerks easily elicited, and the plantar reflexes flexor. There is no ankle clonus.

Sensation is unaffected all over the body.

*Electrical Reactions.*—The electrical reactions were examined with great care and repeated several times.

#### RIGHT.

	Faradism.	Galvanism.
Teres major - - -	Active	Short and sharp
Supra-spinatus - -	"	"
Infra-spinatus - -	"	"
Levator anguli scapulæ -	"	"
Rhomboideus major and minor	"	"
Trapezius - - -	Upper border reacts faintly ; middle portion reacts weakly ; below this, reaction very doubtful	No response anywhere
Sterno-mastoid - -	Contracts feebler	No reaction
Pectorals - - -	Active	Good
Serratus magnus - -	"	"
Deltoid - - -	"	"
Biceps - - -	"	"
Triceps - - -	"	"
Brachialis anticus -	"	"

#### LEFT.

	Faradism.	Galvanism.
Teres major - - -	Active	Good
Supra-spinatus - -	"	"
Infra-spinatus - -	"	"
Levator anguli scapulæ -	"	"
Rhomboideus major and minor	"	"
Trapezius - - -	Poor contraction all over	No response
Sterno-mastoid - -	Poor contraction	"
Pectorals - - -	Active	Good
Serratus magnus - -	"	"
Biceps - - -	"	"
Triceps - - -	"	"
Brachialis anticus -	"	"



The gait was quite unaffected, and there was no evidence of Rombergism, ataxia, or intention tremor. Speech was normal.

The eyesight was good, the pupils were round, equal, and reacted to light and to accommodation. There was no evidence of nystagmus, and both discs were healthy. The movements of the eyes were perfectly free in all directions.

Hearing was unaffected, as were also taste and smell.

*Respiratory System.*—The chest was long and flat; expansion was poor, especially at both apices. There was slight hyper-resonance over the greater part of the chest, with slight dulness at both apices. The breath sounds were faint, but vesicular. Expiration was prolonged above and below the clavicles and over the lungs posteriorly with a few rhonchi. Slight increase in the vocal fremitus was noticed in the left infra-clavicular region. The sputum contained no tubercle bacilli.

*Circulatory System.*—The heart was not enlarged. The first sound was weak, and the second accentuated, but both were clear and unaccompanied by murmurs. There was no thickening of the vessels, the blood-pressure was low, and the pulse rate 74.

The liver and spleen were not enlarged. The stomach was slightly dilated, and the urine did not contain any abnormal constituents. There was no evidence of syphilis.

On admission to hospital the patient was found to be very weak, and quite unable to do anything. He made very rapid progress, and gained more than one stone in two and a half months. The muscular condition improved greatly under high frequency electricity applied to the shoulders and back, faradism, and strychnine.

The absence of the involvement of other muscles than the sterno-mastoid and the trapezius excluded the possibility of a facio-scapulo-humeral (Landouzy-Déjérine) type of muscular dystrophy, and left no doubt of the correctness of the diagnosis of double spinal accessory paralysis, a somewhat rare condition. It is undoubtedly associated with the operations for the removal of the tuberculous glands from the neck. At the time of the operations the nerves do not appear to have been injured, but later they have in some way become involved in the scar tissue, with the above ultimate result.

CASE 2.—The second case was that of a man who showed an isolated paralysis of the right trapezius. He gave a history of

tuberculous glands in the right side of the neck which had been removed by operation fourteen years previously. Since then he had had no further trouble, and had been able to continue at work until recently, when a swelling began to develop upon the left side of the neck, and as it gave rise to a discharge he came to the Royal Infirmary to have it examined and dressed. The paralysis of the right trapezius was then noticed. A clearly defined scar (see Fig. 7) was visible behind the upper and middle portion of the posterior border of the right sterno-mastoid. In this case the sterno-mastoid escaped involvement, and no other muscles except the trapezius were affected. There was no evidence of syphilis or alcohol.

Paralysis of the spinal accessory from injury to the nerve during the removal of tuberculous glands from the neck is, of course, well known, and the results become visible immediately after the operation. But the particular point of these two cases is that the spinal accessory does not appear to have been injured at the operation, and it was not until ten and fourteen years respectively afterwards that the paralysis became visible, and the feeling of weakness in the shoulders had only been recently noticed. If it be correct that the explanation consists in a subsequent involvement of the nerve in the scar tissue, it would be interesting to discover how it is that the condition has not been described more frequently.

## Abstracts

### ANATOMY.

**THE DEVELOPMENT OF REFLEX MECHANISMS IN AMBLY-STOMA.** C. JUDSON HERRICK and GEORGE E. COGHILL, *Journ. Comp. Neurol.*, 1915, xxv., Feb., p. 65.

It is customary to use the concept of a simple reflex arc, consisting of a dorsal and a ventral root neurone, as the unit upon which more elaborate reflex systems may be based.

If the development of such a mechanism be studied in amphibians, where the embryo becomes functional at a very early stage, it is found that the only possible reaction to stimulation is a response of the whole somatic musculature. The first response to stimulation of the amblystoma embryo is a simple avoiding reaction, turning the head away from the side touched.



FIG. 5.—*Case 1.* Photograph to show that the Pectorals, Deltoids, and Arm Muscles were unaffected.

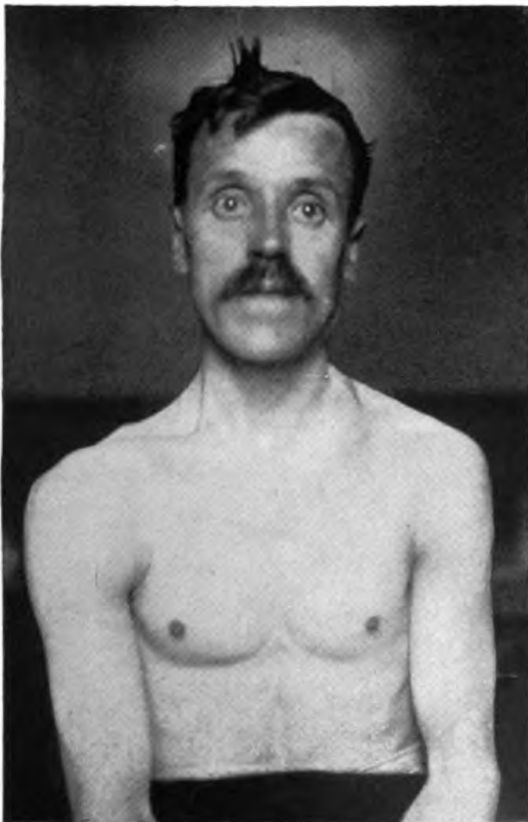


FIG. 6.—*Case 2.* Front View. Isolated Paralysis of Right Trapezius.

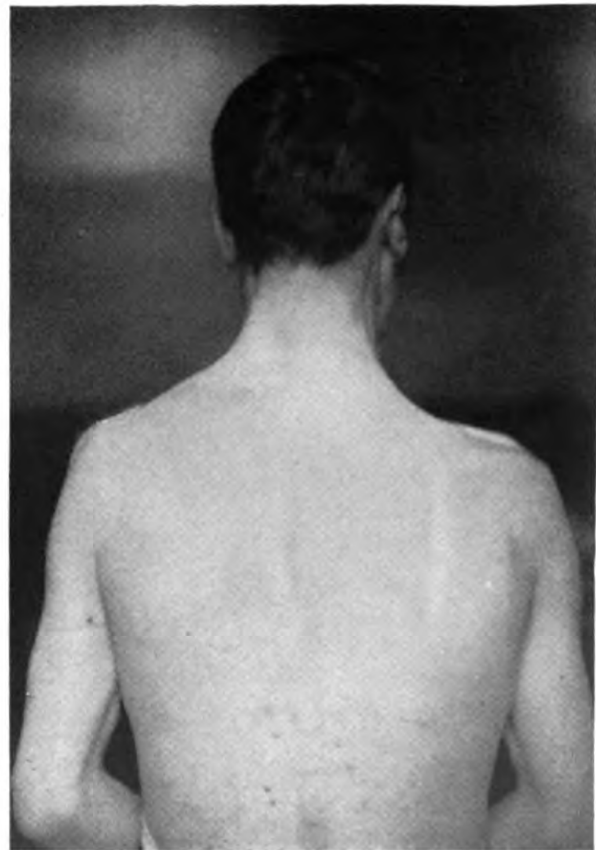


FIG. 7.—*Case 2.* Back View. Isolated Paralysis of Right Trapezius. Note the long scar directly *behind* the posterior border of the Right Sterno-mastoid.

1. The first part of the document is a list of names and addresses of the members of the committee. The names are listed in alphabetical order, and the addresses are listed below each name. The list includes the names of the members of the committee, the names of the members of the sub-committee, and the names of the members of the advisory committee. The addresses are listed in the same order as the names.

This is soon followed by an S-shaped reaction of the whole body, and this in turn by a simple swimming reaction. In the earliest stages of all of these reactions, the afferent nervous impulse is transmitted through a chain of several neurones to the upper end of the spinal cord, thence across the ventral commissure into a descending efferent or motor tract, which is also composed of a chain of neurones. In the earliest swimmers the initial response excited by cutaneous stimulation is supplemented by a "muscle-sense" response, excited by the muscular contraction itself, and thus the rhythm of serpentine locomotion is maintained.

In the spinal cord of the half-grown larva, the simple peripheral sensory neurones of the earliest stage have been replaced by definite spinal ganglion neurones. Long ascending and long descending tracts are differentiated, and by the elimination of numerous synapses, conduction in the spinal cord becomes more rapid. In addition, short reflex connections are possible within a single segment of the cord; but whatever the source of the stimulus, a common type of total response habitually follows.

In the mammalian spinal cord there is a much more complete differentiation of individual reflex systems, and a more perfect isolation of the long conduction pathways.

In the medulla oblongata of the half-grown larva, the peripheral sensory neurones show a high degree of functional specificity, and the central neurones of the second order tend to be grouped around these special sensory roots. But the functional localisation of these secondary centres is not complete, each being to some extent a correlation centre. In mammals the functional differentiation of the primary bulbar centres is complete, and the functions of correlation are transferred to higher cerebral centres.

There is thus a progressive differentiation of the specific reflexes away from the type of total reaction, and the gradual perfection of a great variety of individual adaptive movements, for each of which a particular chain of neurones is set apart. Rapid conduction through each of these circuits is then facilitated by the elimination of unnecessary synapses and the closer articulation of the residual neurones. The ordinary "reflex-arc" thus appears late in development.

A. NINIAN BRUCE.

#### ON THE PHYSICAL STRUCTURE OF THE NERVE CELL.

(54) (*Sur la structure physique de la cellule nerveuse.*) LAIGNEL-LAVASTINE and VICTOR JONNESCO, *Rev. Neurol.*, 1913, **xxi**, Dec. 30, p. 717.

If a nerve cell be preserved in a fresh state in normal saline solution, in which it is presumably unaltered, it will be seen to present a definite structure. This is sometimes granular, sometimes appear-

ing as if composed of numbers of little drops close together. The granular condition appears to be characteristic of the altered cell, because (1) it is found in those cells which had been kept several hours in normal saline, (2) it coincides with solidification of the nucleolus and migration of the nucleus to the periphery, (3) and with an increase in the myelinogenous substance. The fact that the nucleus and nucleolus are composed of little droplets is a proof of their liquid condition.

From the ultramicroscope we know that the different primary constituents, proteids, carbohydrates, and fats are present in a colloid state. The microscope shows that these constituents are present in the form of innumerable little droplets.

A. NINIAN BRUCE.

**THE DEVELOPMENT OF THE SYMPATHETIC NERVOUS  
(55) SYSTEM IN ELASMOBRANCHS.** GEORGE A. BATES, *Anat. Record*, 1915, ix., p. 49. (*Proc. Amer. Soc. Anatomists*, Dec. 1914.)

"THE first appearance of the sympathetic in *Squalus acanthias* is in the form of a series of ganglia lateral to the aorta in 15 mm. embryos. At the time of its formation, the dorsal and ventral roots of the somatic spinal nerves, in their ventral growth, have reached this level. The ganglion of the sympathetic is formed in immediate connection with the dorsal root from cells that arise from this source. At the time of development there are relatively few cells present in the ventral root, and the question of contribution to the ganglion of cells from that source, while not improbable, is doubtful."

LEONARD J. KIDD.

## PHYSIOLOGY.

**CEREBELLAR LOCALISATION (ANATOMICAL VERIFICATION).  
(56) FUNCTIONS OF THE CENTRES OF THE LATERAL LOBE.**  
(*Les localisations cérébelleuses (vérification anatomique).  
Fonctions des centres du lobe latéral.*) ANDRÉ-THOMAS and A. DURUPT, *Rev. Neurol.*, 1913, xxi., Dec. 30, p. 728.

THE authors made small localised lesions in the lateral lobe of the cerebellum in dogs and monkeys, and found that definite localised physiological disturbances resulted. These consisted in passiveness of the limb when placed in certain positions, in other words, when it was placed in certain abnormal attitudes these were retained by the animal. When, on the other hand, the limb was placed in a position which may be described as the opposite of the last, it was returned to the normal much quicker than usual, so that there seems to exist at the same time a hyperactivity of the

one set of muscles and a weakness in the action of the antagonistic set. Dysmetry is mostly the result of movements executed by the hyperactive muscles.

A. NINIAN BRUCE.

**THE INFLUENCE OF TIMBRE AND LOUDNESS ON THE**  
(57) **LOCALISATION OF SOUNDS.** CHARLES S. MYERS, *Proc. Roy. Soc.*, 1914, lxxxviii., Series B., Sept. 15, p. 267.

THE "laterality" of a sound, *i.e.*, its estimated position in relation to the median "sagittal" plane, is determined by binaural differences or equality of intensity of the sensation. Experimental changes in the timbre or loudness of a sound make no difference in its laterality. As soon as an infant begins to take notice of sounds, their laterality is at once appreciated. There are no trial movements of the head, this way or that, for sounds placed to one side of the median sagittal plane. The reception by one ear of a stimulus stronger than that reaching the other ear at once determines in the infant a movement of the head and eyes to bring the latter towards the source of the sound.

On the other hand, even in adult life, the grossest errors are made in determining the incidence of a sound, *i.e.*, its estimated position in relation to the horizontal "interaural" line, unless the subject has been practised in the changes in timbre and loudness produced by such changes of incidence, or unless he is allowed to make movements of the head, the effect of which is to vary the timbre and loudness of the sound while it is being heard.

The "incidence" of a sound is hence determined by its timbre and loudness. Experimentally produced changes in the timbre or loudness of a sound lead to marked changes in its apparent incidence. Tactual sensibility appears to play no part in auditory localisation. Localised tactual sensations evoked by auditory stimuli are generally the outcome of interpretations by the subject, resulting from his natural tendency to treat sounds as material objects, and to refer to them a localisation based on solely auditory data.

A. NINIAN BRUCE.

**EFFECT OF THYROIDECTOMY, FOLLOWED BY THYROID FEED-**  
(58) **ING, ON WEIGHT OF PITUITARY IN RABBITS.** A. E. LIVINGSTON, *Proc. Soc. Exp. Biol. and Med.*, 1914, xi., Feb. 17, 40 (857).

No effect on the pituitary weight was observed from feeding desiccated thyroid to normal rabbits, but in the thyroidectomised group of males it appears that thyroid feeding does prevent the

enlargement of the pituitary, which would otherwise follow on removal of the thyroid. The number of animals here used, however, was too small to base any definite statement.

A. NINIAN BRUCE.

## PSYCHOLOGY.

**FURTHER STUDIES IN THE CHEMICAL DYNAMICS OF THE**  
(59) **CENTRAL NERVOUS SYSTEM**. — 3. **On the Process of Forgetting.** T. BRAILSFORD ROBERTSON, *Folia neuro-biologica*, 1914, viii., p. 485.

THE hypothesis is advanced that the fading of a memory-trace is due to the issuance of the substance composing it from the colloidal medium, in which it is laid down into the circulating fluids which bathe the nervous elements; in other words, the deposit which forms the memory-trace is "washed-out" of the nervous system by the circulating fluids which bathe it. The relationship between the time and extent of forgetting, which is deducible from this assumption, is shown to be that which is experimentally observed. The process of forgetting, even when the material forgotten consists of discrete unitary images, is not particulate but continuous. It is quantitatively correct to employ the number of discrete images forgotten as a measure of the extent of forgetting, provided that the total content of consciousness remains approximately constant during the period occupied by the experiment. Under like circumstances, and for like material, the more rapidly an experience is initially forgotten, the more tenaciously a portion of the experience is retained. The rate of issuance of the substance composing the memory-trace from the menstruum in which it is laid down is different in different parts of the central nervous system.

A. NINIAN BRUCE.

**ON THE IMPORTANCE OF THE UNCONSCIOUS IN PSYCHO-**  
(60) **PATHOLOGY.** C. G. JUNG, *Brit. Med. Journ.*, 1914, Dec. 5, p. 964.

DR JUNG'S views on this subject are expressed here very clearly. He considers that the unconscious contains all those psychic events, which because of the lack of the necessary intensity of their functioning, are unable to pass the threshold which divides the conscious from the unconscious. The conscious and the unconscious may thus be separated from one another, because, what is in the conscious cannot be unconscious. In normal persons, the principal function of the unconscious is to effect a compensation and thus produce a balance. All extreme conscious tendencies



are softened and toned down by an effective opposite impulse in the unconscious. The term "mental balance" must not be regarded merely as a figure of speech but as an actual disturbance of that mental balance which exists between the conscious and the unconscious. If the normal functioning of the unconscious processes breaks through into the conscious mind in an abnormal manner, it disturbs the adaptation of the individual to his environment, and the "mental balance" is upset. The reason that these compensating influences break through into the conscious mind in such a strange manner, is because they have to struggle against the resistances already existing in the conscious mind, and because they also are obliged necessarily to present themselves in the language of the unconscious, *i.e.*, in material that is of a heterogeneous and subliminal nature. The way in which the unconscious works is best seen in disturbances of a psychogenic nature, such as hysteria. If the mental balance be lost, these corrective impulses or compensations ought to be the beginning of the healing processes, but in reality this does not result because these unconscious impulses which now make themselves apparent do so in a form which is altogether unacceptable to consciousness, and thus they act to the detriment of the individual.

A. NINIAN BRUCE.

**A FEW DREAM ANALYSES.** MEYER SOLOMON, *Journ. Abnorm. Psychol.*, 1914-15, ix., Dec.-Jan., p. 341.

THE analysis and interpretation of four dreams in more or less normal individuals, confirming the previous results of the author and contradicting many of the conclusions of the Freudian School with respect to the function and meaning of dreams.

H. DE M. ALEXANDER.

**ARTIFICIAL DREAMS AND LYING.** A. A. BRILL, *Journ. Abnorm. Psychol.*, 1914-15, ix., Dec.-Jan., p. 321.

THE author resorts to artificial dreams whenever a patient claims that he does not dream at all or he suddenly stops dreaming. The analysis of such dreams does not differ from the analysis of real dreams. As far as technique is concerned, they always show the same processes, and the latent thoughts always show the realisation of wishes. The artificial dream is a simpler and more potent instrument than the tedious association experiment. Furthermore, they also demonstrate some of the mechanisms of conscious deception. The dreamer consciously or unconsciously gravitates towards his own strivings. The artificial dream betrays the hidden complex. Examples are cited.

H. DE M. ALEXANDER.

**THE PSYCHOPATHOLOGY OF THE FAMILY.** L. E. EMERSON,  
(63) *Journ. Abnorm. Psychol.*, 1914-15, ix., Dec.-Jan., p. 333.

MUCH is made of environment in physical affairs, not less should be made of environment in psychical affairs; and the most important part of the psychical environment of an individual is his family. The author illustrates the cases he has studied due to psychically caused conflicts. In the child, or individual, one sees the family writ small. H. DE M. ALEXANDER.

**A CRITICISM OF PSYCHANALYSIS.** CHARLES W. BURR, *Amer.*  
(64) *Journ. Insanity*, 1914, lxxi., Oct., p. 233.

THE purpose of psychanalysis of any given invalid is to discover some unpleasant, painful, or shameful event in the past history of the patient, because the event, or rather the memory of it in the unconscious mind, is the thing which is causing the conflict. When it is brought into conscious life, the patient is shown what is really the matter with him, and frequently is cured. To an outsider this seems a very complex way of doing a very simple thing. One does not need dreams, free association, and blocking of word association to find out these matters. The trouble, when present, resides not in the unconscious mind, but in a very remembering and conscious mind.

Those of us who are inclined to believe that there is always a physical cause for a mental act, and a perversion of physical function whenever there is a perversion of mental acts, want the proof of it. Freud nowhere gives any proof of his dogmas.

Freud's theory of complexes, conflicts, and their censor is not proven or even rendered probable in the writings of Freud or anyone else.

As to dreams, one is inclined to suspect as much power of symbolising in the interpretation of dreams as in the dreamer.

Freud admits himself the limited use of psychanalysis. The great objection to it is the stress laid on sexual matters, and recently a German has published a book, the avowed purpose of which is to instruct teachers and clergymen how to practise the art!

Freud states that psychic insult is the predominant cause of certain mental disorders. We are continually talking about the strenuousness of modern life. There is a great deal of humbug in this. It is only the inherently weak who mentally succumb to it.

Freud's disciples frequently state that those who oppose their teachings are unprogressive and ignorant, &c. This is not an argument, because it does not require an intellect of a very high order to understand whether hypotheses ought to be accepted as proven facts. H. DE M. ALEXANDER.

## PATHOLOGY.

**SYMMETRICAL CENTROLOBAR INTRACEREBRAL SCLEROSIS.**

(65) **PARAPLEGIC SYNDROME.** (*Sclérose intra-cérébrale centrolobaire et symétrique. Syndrome paraplégique.*) PIERRE MARIE and CHARLES FOIX, *Rev. Neurol.*, 1914, xxii., p. 1.

A VERY full pathological account of a most interesting case. The patient was a woman, aged 28, who suffered from pulmonary tuberculosis, and who developed in fifteen days, at the age of 18, without loss of consciousness, a progressive quadriplegia, or rather a very pronounced spasmodic triplegia, the right arm being least affected. Marked contractures later occurred. The left Babinski reflex was positive, the right doubtful. The pupils reacted to light and there was no nystagmus.

The brain appeared normal. There was no meningitis. After hardening for a month and a half in formalin, it was noticed that there was a denser greyish area on the posterior and superior part of each hemisphere, and on section there was found a symmetrical and bilateral centrolobar sclerosis extending from the base of the brain to the summit, and involving the ascending frontal convolution, the superior part of the parietal lobe, and the whole of the occipital lobe. The two areas were connected through the posterior part of the corpus callosum. The general appearance closely resembled the patches found in disseminated sclerosis. The lateral ventricles were dilated.

Microscopically the sclerosed area showed complete absence of myelin in some places, diminution in others, and here and there fibre systems which seem to have escaped practically untouched. The essential part of the lesion was the great proliferation of the neuroglia with dense fibril formation. The vessels showed thickened walls without perivascular infiltration. The axis cylinder processes had disappeared to a considerable extent, and those that remained showed various abnormal conditions. A very few appeared normal. Some appeared normal in places and showed irregularities, spindle formation, fragmentation, &c., in different parts of the fibre.

Apart from the above area, no others were found, although careful examination was made for their presence. Various tract degenerations were present, *e.g.*, in the crossed and direct pyramidal tracts. The rest of the cortex was unaffected.

The condition is different from infantile cerebral sclerosis. It resembles disseminated sclerosis in some ways, *e.g.*, persistence of axis cylinders, but differs from it in the perfect symmetry of the two areas, the fact that they are connected by the corpus callosum, and the absence of any similar areas in other parts of

the nervous system. The authors accordingly think that it is not an abnormal form of disseminated sclerosis. There was no evidence of syphilis, and it is doubtful if the tubercular element had any direct connection. There was no ependymitis. They are rather inclined to consider a vascular origin, inflammatory rather than ischemic, as more probable.

A. NINIAN BRUCE.

**LYMPHOGENOUS INFECTION OF THE CENTRAL NERVOUS  
(66) SYSTEM.** DAVID ORR and R. G. ROWS, *Brain*, 1914, xxxvi., p. 271.

In the present paper the authors discuss at some length the mode of production of inflammatory and degenerative lesions of the central nervous system. Their conclusions are based on the evidence they have accumulated in recent years by experimental and clinical study.

It has been shown by Guillain, Marie, Homén, Spitzer, and others, that chemical agents and micro-organisms experimentally injected into nerves, can be traced from the periphery along the nerve trunks into the spinal cord. This diffusion is rendered possible by the presence of an ascending lymph system in peripheral nerves, nerve roots, and posterior columns of the spinal cord.

The first section of the paper summarises the clinical cases which afforded evidence of lymphogenous infection.

In a case of brachial neuritis, associated with a staphylococcal infection in the cervical muscles, pus was found bathing the brachial plexus, and surrounding the root ganglia of the cervical cord. The extramedullary portions of the anterior and posterior cervical roots showed no Marchi reaction, but the intramedullary root fibres showed an acute myelin degeneration. The writers conclude that for the production of such a gross degenerative lesion of purely toxic origin, "toxins must have passed along the perineural lymphatics from the infective area round the spinal ganglia and brachial plexus; once having gained the cord, they flowed with the lymph into the anterior and posterior root entry zones, and also round the cord in the meshes of the pia."

Further evidence of the diffusion of toxins upwards along nerves from peripheral foci of infection is afforded by seven other clinical cases, all of which showed involvement of the posterior columns in that region of the cord which corresponded to the nerve supply of the infective focus. Several points of importance are emphasised: (1) Degeneration of anterior and posterior spinal roots (in lymphogenous infection) always begins at the point where the fibres entering the cord lose their neurilemma sheath. (2) The greater the degree of toxicity in the lymph stream, the

more diffuse the cord lesion. (3) Toxins can ascend along perineural lymphatics without producing parenchymatous changes in the nerves.

In their experiments the writers used celloidin capsules containing broth cultures of micro-organisms, which were placed in contact with nerves. Thus the lesions produced resulted from the absorption by the nerves of diffusible toxin derived from the pathogenic bacteria, and not from the activity of the organisms themselves.

Both the inflammatory and degenerative phenomena resulting from these experiments were studied; from the latter the following conclusions were drawn:—

1. In spinal and cranial nerves there is an ascending lymph stream to the central nervous system whose main current lies in the spaces of the perineural sheath. Toxins reach the spinal cord and brain by this route, and although they spread to some degree in the lymph spaces of the pia-arachnoid, and may so affect structures at a distance from the point of entrance, they pass for the most part in the main stream along the nerve roots into the substance of the central nervous system.

2. Outside the central axis the nerves are possibly protected by the vital action of their neurilemma sheath; most probably, however, it is the peripheral situation of the lymph current which is the deciding factor. The histological evidence derived from experimental infection of peripheral nerves is next dealt with at some length.

In the first series the celloidin capsule was placed in contact with the sciatic nerve. The resulting inflammatory phenomena could be traced from the sciatic nerve along the sensory ganglia to the spinal nerve roots. The inflammation diminished in severity, as the distance from the toxic focus increased; the reaction in the histological elements—epineurium, perineurium, veins and capillaries—was very marked; the hæmatogenous elements did not participate in the process, and the very slight involvement of the intimal cells was noteworthy.

In cases where suppuration had occurred these appearances were modified, the formation of fibroblasts and new capillary vessels being more evident, and the degree of adventitial and intimal reaction more pronounced.

In the second series of experiments, the capsule was placed much nearer the cord, in order to shorten the route of infection. Positive results were obtained in every case, and by means of longitudinal sections it was possible to trace the inflammatory process in unbroken continuity from the sensory ganglia to the centre of the cord.

In the cord the vessels were the seat of marked pathological

change, the neuroglia showed a general reaction, and the nerve cells were acutely degenerated.

In those cases in which rupture of the capsule had occurred, micro-organisms could be followed along the nerves to the posterior root ganglia, and onwards to the dura mater. The efficiency of the dural barrier to the inward spread of organisms was well illustrated by these experiments; with their covering of highly vascular areolar tissue the dura mater and perineurium afford a most efficient protection to the spinal cord, and neutralise the effects of infection to a considerable extent.

A further series of clinical cases (studied in collaboration with Dr Stephenson) is next referred to.

They confirm the experimental results, and clearly demonstrate that any portion of the central nervous system may be attacked by organisms or toxins passing up the nerves from infected foci.

With one exception, every case showed a diffuse meningo-myelitis of the cerebro-spinal axis; the anatomical path of entrance and spread is, therefore, a constant one.

In the third section of the paper, the lesions produced by lymphogenous infection of the cord are contrasted with those which occur when a hæmatogenous intoxication is induced.

A series of experiments were undertaken, in which the abdominal cavity was chosen as the site for infection. Celloidin capsules containing a broth culture of the *Staphylococcus pyogenes aureus* were placed in various regions of the abdomen. Post mortem, these were found surrounded by inflammatory exudate, and adherent to neighbouring organs.

The sympathetic ganglia showed microscopic evidence of reaction. There was no evidence of lymphogenous infection in the spinal root ganglia nor in the nerve roots and spinal membranes.

The changes found in the spinal cord are summarised as follows:—

1. The most highly developed structures, the nerve cells, suffer least of all.
2. There is primary degeneration of the myelin sheath round the cord margin and along the postero-median septum.
3. The myelin degeneration is greatest in the upper part of the cord.
4. There is œdema of the cord.
5. There is active proliferation of the perivascular neuroglia.
6. The vessels are dilated, congested, are hyaline, and contain thrombi of the same nature.

If these be now contrasted with the cord lesions in lymphogenous infection the difference is at once obvious.

Lymphogenous infection is characterised by :—

1. The reaction of the cells of the fixed connective tissue.
2. The proliferation of the cells of the adventitial sheath of the veins and capillaries.
3. The appearance of numerous scavenger cells when the myelin is disintegrated.
4. The nerve cell degeneration and neuronophagy.

The writers conclude that the lesions in hæmatogenous intoxication, which are of a degenerative nature, differ very widely from those found in lymphogenous infection, where the fixed tissues are actively proliferating, and all the morbid phenomena of an inflammatory type.

The difference between the two might be expressed by saying that in lymphogenous infection the inflammatory phenomena reach their maximum; in hæmatogenous intoxication they are reduced to a minimum.

They further point out that the hypothesis of a general intoxication does not sufficiently explain the mode of production of hæmatogenous lesions. The peculiar distribution of the myelin degeneration is in itself sufficient to suggest that there is another influence at work, and from their experimental evidence the writers consider that this factor is to be sought in the sympathetic nervous system.

Disturbance of the sympathetic influence upon the cord vessels might be held responsible for a dilatation and increased permeability of their walls, so facilitating the passage of toxins into the surrounding tissues. Evidence of this is seen in the proliferation of the perivascular neuroglia. It is conceivable, however, that with time a permanent paresis of the vessel wall with slowing of the blood stream occurs, thus affording the most favourable conditions under which mild toxicity of the blood could exercise a deleterious action upon the vessel walls and nutrition of the nervous tissues generally.

Tabes and dementia paralytica the writers regard as chronic inflammatory diseases of lymphogenous origin. They base their opinion on the close similarity between the vascular lesions of these diseases and those found in experimental lymphogenous infection of the peripheral nerves and cord.

They agree with Wickman and Romer that acute poliomyelitis is not a blood infection, but a disseminated meningo-myelo-encephalitis of lymphogenous origin.

Diffuse non-systemic lesions of the spinal cord they consider must be placed in the hæmatogenous category, since in their morbid features they are degenerative in character, and not inflammatory.

The remaining section of the paper is devoted to a consideration of the histological elements in inflammatory reactions induced by lymphogenous infection. It does not lend itself to abstraction.

The mode of origin and the morphological variations of the various types of cell, together with the opinions of other workers, are discussed at length.

A full bibliography is appended.

R. M. STEWART.

## CLINICAL NEUROLOGY.

### **THE PHYSIOLOGICAL SIGNIFICANCE OF THE REFLEX (67) PHENOMENA IN SPASTIC PARALYSIS OF THE LOWER LIMBS. F. M. R. WALSH, *Brain*, 1915, xxxvii., p. 269.**

In this paper the author sets out to consider the reflex phenomena accompanying spastic paralysis of the lower limbs from a physiological point of view. He has endeavoured to correlate these, and to establish an analogy between them and the reflex phenomena described by Sherrington in his physiological researches.

The paper deals mainly with the reflex movements of the lower limb. These consist chiefly of reflex flexion. This occurs as the spontaneous flexor spasms seen in many cases of spastic paraplegia, and can also be obtained by cutaneous or deep stimuli applied to almost any part of the limb. The movement, when analysed, consists of a single movement of flexion at hip and knee, with dorsiflexion of foot and toes, especially the hallux.

The receptive field of this reflex includes the skin and deep structures of all but the proximal extremity of the limb. The reflex is most readily elicited from the sole. The author regards the Babinski plantar reflex, the "extensor response," as part of this reflex flexion, which he considers to be strictly analogous with the nociceptive flexion reflex of the hind limb of the spinal animal.

He considers the rigidity of the leg in hemiplegia and in paraplegia in extension analogous with Sherrington's decerebrate rigidity. The condition of the legs in the flexed form of paraplegia is compared with that found in the spinal animal. He contrasts the two forms of spastic paralysis of the lower limbs, namely, the extended and flexed forms, and finds that they differ in that, in the former, both extensor and flexor groups of muscles show a high degree of reflex activity, while in the latter, only the flexors retain any reflex action. This essential difference has not been previously described. Comparing the two groups of muscles, he concludes that each has a specific type of reflex action—that of the extensors being tonic in character, while that of the flexors is phasic.



The extensors maintain a constant tonus—the spasticity of the extended leg; while the flexors are responsible for reflex movements, and do not show a maintained tonus like their antagonists.

The nervous mechanism of both movements and tonus is considered, and the author, working on the analogy with animal physiology, postulates an extrapyramidal efferent path which he regards as subserving the tonic activity of the limb extensors.

The crossed plantar reflex is dealt with at length, and is regarded as part of a crossed extension reflex.

The question of total lesions of the cord is also considered.

Numerous graphic records and photographs of reflex movements accompany the paper, which is based upon the study of a large series of cases.

AUTHOR'S ABSTRACT.

**THE EARLY DEVELOPMENT OF MYOSITIS OSSIFICANS PROGRESSIVA MULTIPLEX ILLUSTRATED BY AN APPARENTLY CONGENITAL OR ALMOST CONGENITAL CASE.**

F. PARKES WEBER and A. COMPTON, *Brit. Journ. Child. Dis.*, 1914, xi., p. 497.

A RECORD of a case in a female child, aged 2 years, in whom the disease first developed at the age of  $7\frac{1}{2}$  weeks. Trauma acted as an occasional exciting cause, as lumps appeared on the shoulder after a slight fall, and also at the site of fibrolysin injection and biopsy incision.

The paper is illustrated by skiagrams, diagrams showing the development of the swellings, and microphotographs of one of the affected muscles.

J. D. ROLLESTON.

**BROWN-SÉQUARD'S SYNDROME: INJURY TO THE CERVICAL CORD BY A BULLET.** (*Syndrom de Brown-Séquard: Plaie de la moelle cervicale par balle.*)

E. DUPRÉ, HEUYER, and BERGERET, *Rev. Neurol.*, 1914, xxii., Juin 15, p. 741.

A WOMAN, aged 48, became paralysed in both legs and in the left arm as the result of a bullet wound. This lasted three months, and was accompanied by total anæsthesia of the paralysed limbs and incontinence. The right leg then began to recover movement, and sensation returned in the left leg, until ultimately she showed left hemiplegia with absence of sensation on the right side from the sixth dorsal segment downwards; from the fourth to the sixth dorsal segment sensation was diminished, and above this unaffected.

A skiagram showed that the bullet had entered at the level of the first dorsal vertebra, when the metallic covering had been left; it had then divided part of the left half of the spinal cord, and

finally lodged in the superior part of the body of the second dorsal vertebra.

The case is interesting, because Brown-Séquard's syndrome is rarely met with in lesions of the cervical region of the cord, and the crossed hemianæsthesia only extended as far upwards as the sixth dorsal segment, thus giving a misleading impression of the true level of the lesion.

A. NINIAN BRUCE.

**ADIPOSO-GENITAL DYSTROPHY FROM MENINGITIS.** (*Distrofia* (70) *adiposo-genitale da meningite*.) PAVI, *Gazz. d. osp.*, 1914, xxxv., p. 73.

A RECORD of a case in a man, aged 31, in whom all the symptoms of Fröhlich's syndrome followed an attack of serous meningitis at the age of 28. The cerebro-spinal fluid showed lymphocytosis and a negative Wassermann. Optic neuritis was present, and there was enlargement of the sella turcica.

J. D. ROLLESTON.

**PURULENT MENINGITIS FOLLOWING PENETRATION OF AN** (71) **EYEBALL BY A FISH-HOOK.** ARNOLD KNAPP, *Arch. of Ophthalmol.*, 1915, xlv., Jan., p. 10.

A MAN, aged 66, while fishing, had the centre of his left cornea penetrated by a fly-hook on a cast back of his line. The barb passed to the interior of the eye, the point of the hook penetrating the lens. He was not seen by a doctor until seven hours later, as he had to walk two miles along the river bank, row four miles across the lake, and motor twenty miles home. The hook was cut out. He was then advised to have the eye removed, but declined. Thirty-three hours after the accident the wound was found open, ragged, and the iris covered with a thin layer of pus. Fifty-seven hours after the accident the eyeball was enucleated, and a thin greyish line observed extending almost back to the optic nerve. No microscopic examination of the eyeball was made, and the specimen was unfortunately lost. Eighty hours after the occurrence of the accident symptoms of purulent meningitis developed. A pure culture of the pneumococcus of Fraenkel was obtained from the cerebro-spinal fluid, which was under great pressure and turbid. Death occurred six days following the injury. The necessity for early operation in such cases is thus clear.

A. NINIAN BRUCE.

**CASES OF NERVE CONCUSSION DUE TO BULLET AND SHELL** (72) **WOUNDS.** Major A. H. TUBBY, *Brit. Med. Journ.*, 1915, Jan. 9, p. 57.

THE block of conduction of nerve impulses may be anatomical or physiological. The former is due to severance of the nerve, to destructive pressure, or to crushing. The latter result from

temporary lesions which block the passage of nervous impulses, such as pressure from effusion of blood, stretching of the nerve, or a blow transmitted through the muscle. "Concussion of the nerve" is defined as "damage to a nerve trunk without actual destruction of the axis cylinders." In all cases a stereoscopic skiagram was taken for fragments of shells, &c., and if found, they were removed. Several cases are recorded, and a description of several points helpful in distinguishing between the above are given, such as a partial and irregular paralysis of muscles supplied by one nerve trunk is indicative of physiological blocking, while the continued presence of R.D. is symptomatic of organic injury to the nerve. There are a few remarks on treatment.

A. NINIAN BRUCE.

**TRANSIENT PARAPLEGIA FROM SHELL EXPLOSIVES.** T. R. (73) ELLIOT, *Brit. Med. Journ.*, 1914, Dec. 12, p. 1005.

THE chief features of this are:—Numbness and complete paralysis of the legs immediately after the explosion, but with no manifest wound on the body. The arms are unaffected, but the legs are powerless, so that the patient has to be carried from the field on a stretcher. Within a week movement and sensation return in the legs, and after a fortnight or so the soldier is able to walk about again, although he continues to complain of extreme tenderness in the lumbar region and aching pains shooting up the back. The sphincters are rarely affected. During the paralysis the leg muscles are slightly flaccid, and both the superficial and the deep reflexes are depressed, while there is nearly always an area of hyperalgesia encircling the abdomen above or below the level of the umbilicus. The plantar reflex is never extensor.

Four cases are recorded, and it is pointed out that while the diagnosis of functional paraplegia and residual neurasthenic tenderness undoubtedly is correct in some cases, in many others the injury is to the spinal roots, and although the cases recover, it is important to the injured men that they be not classed with the neurasthenic or hysterical.

A. NINIAN BRUCE.

**ON A RECENT EPIDEMIC OF POLIOMYELITIS.** (*Sur une épidémie récente de poliomyélite épidémique.*) L. GUINON and POUZIN, *Bull. et mém. Soc. méd. Hôp. de Paris*, 1914, xxxviii., p. 399; NETTER, *ibid.*, p. 409.

A RECORD of thirteen cases of which all but two occurred in Paris between July and November 1914. Most belonged to well-known forms of the disease, others showed symptoms of acute ataxia, and others again symptoms of acute meningitis. In a few cases

complete recovery took place. In the subsequent discussion Netter stated that during the same period he had seen thirty similar cases, and had heard of ten others in Paris and the suburbs.

J. D. ROLLESTON.

**TICK PARALYSIS.** JOHN L. TODD, *Journ. of Parasitology*, 1914, i., (75) Dec., p. 55.

A PARALYSIS in children may be associated with the bites of ticks in Western North America and in Australia, and a paralysis of sheep has been associated with the bites of ticks in British Columbia and in South Africa. The ticks associated with these affections are of more than one sort. The *Dermacentor venustus* has produced paralysis in lambs and in a puppy in experiments made under laboratory conditions.

The paralysis of children is not infrequently accompanied by elevation of temperature and by other constitutional symptoms; it is possible that symptoms resembling those observed in children sometimes may appear in adults who have been bitten by ticks. Under experimental conditions by no means every tick bite produces paralysis in laboratory animals. A weak extract of ticks will not cause paralysis when injected into white rats, even though it possesses definite power to prevent the coagulation of blood.

A. NINIAN BRUCE.

**CONVULSIONS DURING PERTUSSIS. TREATMENT BY LUMBAR PUNCTURE, LATER BY INTRAVENTRICULAR ASPIRATION.** L. FISHER, *New York Med. Journ.*, 1914, c., p. 1054.

A BABY, aged 8 months, who had had pertussis for two weeks, developed tonic and clonic convulsions which lasted for two days, and were not affected by injections of chloral hydrate and potassium bromide into the colon, chloroform anæsthesia, or lumbar puncture. The lateral ventricle was then aspirated by puncture of the frontal lobe through the anterior fontanelle, and 20 c.c. of nearly clear sterile cerebro-spinal fluid were withdrawn, showing slight lymphocytosis. The convulsions ceased, and perfect recovery followed.

J. D. ROLLESTON.

**ON TUMOURS OF THE PONS.** (Contributo allo studio dei tumori del Ponte di Varolio.) G. B. CACCIAPUOTI, *Ann. di Nevrol.*, 1914, xxxii., p. 1.

A RECORD of a case of primary angiosarcoma of the pons in a man aged 46. The disease was of four months' duration. Headache and vomiting did not occur until three weeks before death. There was

no papillary stasis. The principal signs and symptoms were tactile and thermic anæsthesia in the area of V<sup>2</sup>, exclusively tactile hypo-æsthesia in the region of V<sup>1</sup>, bilateral loss of conjunctival reflex, difficulty in articulation, dysphagia, unsteadiness of gait, and shortly before death suffocative attacks.

J. D. ROLLESTON.

**AMNESIC APHASIA.** (*L'afasia amnesica.*) L. BIANCHI, *Ann. di* (78) *Neurol.*, 1914, xxxii., p. 99.

A WOMAN, aged 66, had an apoplectic stroke, with loss of consciousness and complete right hemiplegia. The paralysis almost entirely cleared up, but aphasic amnesia persisted, characterised by an almost complete loss of memory for substantives. There was also slight paraphasia. The condition is attributed to a lesion of the island of Reil.

J. D. ROLLESTON.

**ON CERTAIN PSYCHICAL DISTURBANCES OBSERVED IN** (79) **APHASIA.** (*Sur certains troubles psychiques observés dans l'aphasie.*) SERGE DAVIDENKOF, *Rev. Neurol.*, 1914, xxii., Juin 30, p. 806.

THE author draws attention to an alteration in the mental outlook of aphasics, which has not been mentioned in text-books on the subject, and which makes them resemble one another closely. This he proposes to term the "syndrome of weeping sentimentalism" ("*syndrome de la sentimentalité larmoyante des aphasiques*"), and shows itself by a shameful smile, embarrassment, humility, frequent demands for pardon, tendency to get on their knees, to kiss the doctor's hands, sentimental anxiety about their relations, &c. This state is not found in other brain diseases without aphasia. Five illustrative cases are described.

A. NINIAN BRUCE.

**CLINICAL AND EXPERIMENTAL STUDIES UPON THE INJECTION OF ALCOHOL INTO THE GASSERIAN GANGLION** (80) **FOR THE RELIEF OF TRIGEMINAL NEURALGIA.** C. M. BYRNES, *Bull. Johns Hopkins Hosp.*, 1915, xxvi., Jan., p. 1.

IN experienced hands, injection of alcohol into the Gasserian ganglion is without serious risk, and is followed by immediate relief of pain and by all the symptoms indicative of its complete physiological destruction. Exposure of the ganglion before injection is unwarranted, except in rare cases. If deep neural injections have been unsuccessful, and repeated attempts to inject the ganglion by the subcutaneous method have failed, an effort might be made to inject through the exposed foramen

ovale before resorting to the subtemporal operation for removal. By fractional injection it has been demonstrated that the extent of destruction may be limited to that portion of the ganglion from which the affected nerve trunk originates, and that not infrequently the corneal fibres can be spared. From the distribution of corneal anæsthesia, following partial injections of the Gasserian ganglion, it appears that the upper and lower halves of the cornea receive separate innervation. In cases of bilateral trigeminal neuralgia, injection of the ganglion possesses distinct advantages over other methods of radical treatment. Since anatomical continuity is not actually destroyed, and the motor nucleus is not directly affected, conditions are most favourable for recovery of motor function, while sensation should be permanently lost if the ganglion is completely destroyed. Thus, by allowing sufficient time for regeneration in the motor root, bilateral ganglionolysis might be safely practised. Experimental studies appear to indicate that it is not probable that the ganglion can be completely destroyed by a single injection of alcohol, but this can be done by repeated injections.

A. NINIAN BRUCE.

**A CASE OF BILATERAL OPTIC NEURITIS DUE TO SPHENOIDAL**

(81) **SINUSITIS.** A. ALISON BRADBURN, *Brit. Med. Journ.*, 1915, Jan. 16, p. 109.

A MARRIED lady, aged 27, suffered from occipital headaches for about twelve months. She had been in good health except for a severe cold with a copious nasal discharge. When first seen the only objective signs were slight weakness of the left abductor and suspicious neuritis of the left disc. This was followed by diplopia and neuritis, gradually spreading over the whole of the left disc, and soon also over the right. A sphenoidal sinus suppuration was diagnosed which had extended directly forwards and involved the optic nerve. Cocaine and adrenalin tampons were applied to the body of the sphenoid with the view of operation, but had to be stopped, as they made the patient so nervous. She then developed an intense "cold in the head," accompanied by a copious thick yellow discharge, which continued for a week, and then passed off. The neuritis then gradually diminished, and the diplopia suddenly disappeared five weeks later.

A. NINIAN BRUCE.

**VALUE OF THE ALBUMINO-REACTION IN THE CEREBRO-**

(82) **SPINAL FLUID AFTER DEATH.** (Valor de la albumino-reacción del líquido céfalo-raquídeo después de la muerte.) J. PESET and T. PESET, *Policlínica*, 1914, ii., p. 1037.

AFTER post-mortem examination of the cerebro-spinal fluid in forty-five cases, whose deaths were due to various causes, the writers came to the following conclusions:—

1. The albumino-reaction is constantly positive post mortem, whatever the cause of death.
2. It therefore lacks diagnostic value.
3. As a rule the reaction of the cerebro-spinal fluid is slightly alkaline for a short period after death.
4. The guaiacum reaction for blood and pus is only of value when negative.
5. The cyto-diagnosis has the same value after death as during life.

J. D. ROLLESTON.

**THE LANGE GOLD CHLORIDE REACTION ON THE CEREBRO-SPINAL FLUID OF INFANTS AND YOUNG CHILDREN.**

(83) C. G. GRULEE and A. M. MOODY, *Amer. Journ. Dis. Child.*, 1915, ix., Jan., p. 17.

THIS paper contains the results of the Lange reaction on the spinal fluids of some sixty odd children and infants. In the cases of congenital syphilis, the cerebro-spinal fluid reacted to the colloidal gold chloride reaction always in the lower dilutions, and with a marked degree of regularity strongest in the dilutions of 1:40 and 1:80. There is a small group of cases of congenital syphilis in which the reaction is similar to that of parietic dementia. The reaction, as obtained in congenital syphilis, is most nearly approached by those conditions which show a slight inflammation of the meninges or brain, and are not likely to be confused with syphilis. The reaction in tuberculous meningitis is found to be most intense in the dilutions of 1:160 and 1:320. It is likely that the more rapid the course, the more apt is the reaction to occur in the higher dilutions. The authors consider that the Lange gold chloride reaction is of value only as an aid in diagnosis.

A. NINIAN BRUCE.

**OPHTHALMOPLÉGIA INTERNA, THE RESULT OF LEAD**

(84) **POISONING.** L. D. BROSE, *Arch. of Ophthalmol.*, 1915, xlv., Jan., p. 26.

A MAN, aged 25, a foreman painter, complained of loss of sight. He denied syphilis, alcohol, and tobacco, but had a strong smell of paint. Both pupils were found widely dilated, but responsive to convergence. Vision in either eye was  $\frac{15}{20}$  for distance, while near he was unable to read smaller than Sn. 4. There was no disease of the fundus, and no loss in the visual fields for colour or form. A diagnosis of nuclear lead palsy was made, although there were no general symptoms, and a rapid recovery took place with iodide of potash and sulphate of magnesium. A second similar attack was equally successfully cured by similar treatment.

A. NINIAN BRUCE.

**A CASE OF ACROMEGALY 200 YEARS AGO.** LEONARD MARK, (85) *Lancet*, 1915, Dec. 19, p. 1412.

THIS appears to be the earliest representation of an acromegalic to be found in England. The case is that of a man, called Richard Dickinson, who lived at Scarborough, and about whom it is recorded that the singularity of his figure brought him into the notice of visitors. Three figures are here reproduced of him taken from old prints, and their peculiarities are briefly pointed out.

A. NINIAN BRUCE.

**PELLAGRA IN ANTIGUA.** W. M. M'DONALD, *Lancet*, 1915, clxxxviii. (86) Jan. 16, p. 127.

THIRTY-TWO cases had come under observation, all among the blacks, eleven proving fatal. In view of the two rival theories, first, of the Italian medical schools and other investigators, that it is a food disease caused by the ingestion of bad maize; and second, of Sambon and certain American investigators, that it is an insect-borne disease, the following facts are interesting. Pellagra is undoubtedly endemic in Antigua. No one (including Sambon) has even managed to find any *Simulium* in Antigua. There is little running water, and none of the cases have any connection with running water. All the cases have occurred amongst the blacks, who generally live in conditions of poverty and bad hygiene, and whose principal diet is cornmeal and salt fish. Cornmeal is also largely eaten by the white population, among whom no cases of pellagra have occurred, but in their case the cornmeal is taken in conjunction with an otherwise generous and varied diet. The *Stomoxys calcitrans* is found here, and while the above facts are not incompatible with the theory that the disease is conveyed by this fly, it is more probable that it is the result not of the ingestion of spoiled maize, but of a deficiency of some other essential item of diet.

A. NINIAN BRUCE.

**SUMMARY OF TWO YEARS' STUDY OF INSECTS IN RELATION**  
(87) **TO PELLAGRA.** ALLAN H. JENNINGS, *Journ. of Parasitology*, 1914, i, Sept., p. 10.

"OUR studies have led us to believe that ticks, bed-bugs, mosquitoes, fleas, house-flies, and in the absence of further and more incriminating evidence, the lice, may be dismissed from consideration as transmitters of pellagra; that there is not only insufficient evidence to incriminate flies of the genus *simulium*, but much evidence directly opposed to such incrimination, and that the biting stable-fly, *Stomoxys calcitrans*, shows in marked degree those characteristics of distribution, habit, and association with man which would pre-



eminently fit it to be the vector of pellagra if transmission of the disease by a blood-sucking insect is shown to be possible.

"If pellagra is found to be an intestinal disease of bacterial origin, house-flies and others of similar habits will in all probability be found to be an active factor in its causation."

A. NINIAN BRUCE.

**MYOCLONUS AND EPILEPSY: SYNDROME OF UNVERRICHT.**

(88) (*Myoclonie et épilepsie: Syndrome de Unverricht.*) A. AUSTREGESILLO and O. AYRES, *Rev. Neurol.*, 1914, xxii., Juin 15, p. 746.

THIS syndrome was described by Unverricht in 1891, who pointed out its familial and hereditary character. It is characterised by asynchronous bilateral and paroxysmal contractions of the neck, arms, &c., which have the violence of electric shocks; they are separated by quieter intervals, and are accompanied by *grand mal* seizures.

Two cases are here described, the first in a girl, aged 17. The myoclonus was continuous between the epileptic fits, and both developed about the same time—three years ago. Babinski's sign was negative; there was no evidence of syphilis. The second case was that of a boy, aged 14. The myoclonus had begun about the age of 11 years, and had disappeared during his stay in hospital.

In half the cases the epilepsy appeared before the myoclonus, and in a third they occurred at about the same time. Lundborg has described three phases of the syndrome: the first, where nocturnal attacks of epilepsy appear about the twelfth year, and more commonly in girls than in boys (12:5). In the second phase the clonic twitchings develop and last for several hours, and may be so severe as to prevent the patient eating, drinking, or even remaining in bed. After a few years of this, various psychical troubles occur either of the nature of (1) melancholia, (2) mania, (3) mental apathy and katatonia, or (4) mental confusion with visual hallucinations and dysarthria. In the third stage the epileptic attacks cease, but the muscular twitchings increase in severity.

Bromides and chloral do not influence the condition.

A. NINIAN BRUCE.

**REPORT OF A CASE OF MYXŒDEMA ALLIED TO THE IN-**

(89) **FECTIVE EXHAUSTIVE GROUP.** E. F. LEONARD, *Med. Record*, 1914, lxxxvi., p. 917.

THE patient was a man, aged 32, whose illness had begun five years previously as the result of mental shock caused by family troubles. In addition to myxœdema, features characteristic of the infective

exhaustive group were present, viz., physical exhaustion, anæmia, confusion, hallucinations, changeable delusions, disorientation, clouding of consciousness, and changeable emotional reactions.

J. D. ROLLESTON.

**A CASE OF TETANUS RECOVERY.** J. HOGGAN EWART, *Brit. Med. Journ.*, 1915, Jan. 23, p. 156.

A BELGIAN soldier, aged 21, was wounded by a rifle bullet which passed through the upper third of his left thigh. The wound, on examination, was discharging pus from both entrance and exit openings. It was cleaned and dressed. Fourteen days later he complained of sore throat and stiffness of the jaws; 1,500 U.S.A. units of antitetanic serum were at once injected subcutaneously close to the wounds. Tetanus rapidly developed, the spasms in the back and abdominal muscles being very severe, with a marked risus sardonicus. He could only swallow when helped into the sitting posture, and pressure applied to the left trapezius. There was great difficulty in breathing. Hyoscine gr.  $\frac{1}{60}$  gave no relief, and  $\frac{1}{4}$  gr. morphine sulphate, given twice, was followed by cyanosis and cessation of respiration, but he slowly rallied and ultimately recovered.

A. NINIAN BRUCE.

**THE DIRECT METHOD OF INTRALARYNGEAL OPERATION.** (91) CHEVALIER JACKSON, *Journ. Amer. Med. Assoc.*, 1914, 28th Nov.

THE direct method gives a different picture of the larynx from that obtained by the indirect method, in that the parts are seen in their proper proportion and not foreshortened.

In adults the writer prefers local anæsthesia with 8 per cent. cocain, supplemented by a minute quantity of 20 per cent. cocain for the interior of the larynx. In the presence of stenotic laryngeal disease in children stoppage of respiration may occur if a general anæsthetic is given, and the patient's life may be saved only by a tracheotomy or the prompt introduction of the bronchoscopic tube. Cocain is extremely dangerous in children, and for this reason the author is strongly in favour of no anæsthesia. In the case of adults under local anæsthesia the patient and operator sit opposite to each other. The patient's head is held well forwards and very slightly extended. Children are best examined in the recumbent position with the head held high and moderately extended.

It is strongly recommended that the left hand should invariably be used for the introduction of the laryngoscope, so that the necessary dexterity may be acquired, which will leave the right hand free for the manipulation of forceps, &c. In cases in which it is difficult to expose the anterior commissure, the writer

recommends the lateral route. In this method the instrument is introduced down the side of the tongue, which rolls to the opposite side, and very little trouble is experienced by those who are familiar with the landmarks in seeing the anterior commissure. In the case of very large growths the laryngoscope is only used to see while the forceps are used outside the tube. The direct method affords a means of removing a piece of a suspicious growth for microscopical examination with much greater precision than was formerly possible.

J. K. MILNE DICKIE.

## PSYCHIATRY.

### **THE MEDICAL EXAMINATION OF MENTALLY DEFECTIVE**

(92) **ALIENS : ITS SCOPE AND LIMITATIONS.** L. L. WILLIAMS, *Amer. Journ. Insanity*, 1914, lxxi., Oct., p. 257.

THE author reviews the procedure adopted in examining mentally defective aliens on the Ellis Island Station at the port of New York. The exclusion of insane, epileptic, idiot, imbecile, and feeble-minded aliens is now mandatory under the law. The last two are the most dangerous class, and were added to the existing excluding law in 1907. The mental defective may appeal. The number deported has risen from 186 in 1908 to 555 in 1913. The time available for the initial primary inspection (on an average eighteen seconds per alien) is inadequate, and if an alien passes the primary inspection there is no further opportunity to examine him. The author, therefore, pleads for an increase in the medical personnel, and an increase in the working space; as unless, as at present, the aliens are passed fast enough, the immigration officials are blocked in their work.

H. DE M. ALEXANDER.

### **THE TRANSLATION OF SYMPTOMS INTO THEIR MECHANISM.**

(93) CHESTER L. CARLISE, *Amer. Journ. Insanity*, 1914, lxxi., Oct., p. 279.

AN analysis of nine patients, revealing the unknown affect complex which precipitated the essential conflict in their lives.

H. DE M. ALEXANDER.

### **PSYCHOSES IN THE COLOURED RACE.** MARY O'MALLEY, *Amer.*

(94) *Journ. Insanity*, 1914, lxxi., Oct., p. 309.

THIS paper is based on over four years' observations on 800 women—455 white and 345 coloured.

Insanity is increasing among the coloured race; since their emancipation they disregard all hygienic laws, and over-indulge themselves in everything. Dementia præcox predominates—the

catatonic type being more frequent than among the whites, and the paranoid type less frequent. The maniacal form of manic-depressive insanity is more common than the melancholic type. Suicide is very rare—they do not react to the graver emotions, as they have no strict moral standard, they lack courage, and have an inherent horror of death. General paralysis, cerebral syphilis, and other luetic infections are more prevalent than in the whites. The effects of alcohol are not so manifest in the coloured as in the whites. True paranoia is rare, as is also hysteria.

In the asylum, as compared with whites, they are more amenable to discipline, more cheerful, less viciously impulsive, and much less degraded in their habits. On the other hand, their word cannot be depended on, and they cannot be given parole.

H. DE M. ALEXANDER.

**DEMENTIA PRÆCOX, PARAPHRENIA, AND PARANOIA.**

(95) GEORGE H. KIRBY, *Amer. Journ. Insanity*, 1914, lxxi., Oct., p. 349.

THIS is practically an abstract of the chapters on the above affections in the latest edition of Kraepelin's text-book.

H. DE M. ALEXANDER.

**MENTAL DISTURBANCES ASSOCIATED WITH ACUTE**

(96) **RHEUMATISM.** ROBERT H. HASKELL, *Amer. Journ. Insanity*, 1914, lxxi., Oct., p. 361.

A DETAILED description of two cases—the one exhibiting alternate periods of excitement, stupor, and clear mentality, and the other a mildly depressed stuporose state. The literature on the subject is reviewed.

H. DE M. ALEXANDER.

**THE PSYCHICAL MANIFESTATIONS OF DISEASE OF THE**

(97) **GLANDS OF INTERNAL SECRETION.** E. MURRAY, *Amer. Journ. Insanity*, 1914, lxxi., Oct., p. 405.

AFTER a review of the bibliography on the subject and his own personal experience, the author is of the opinion that the glands of internal secretion mutually influence functional activity, and suggests that the true ætiology of the affective psychoses lies in a functional disturbance of these glands.

H. DE M. ALEXANDER.

**MODERN ASPECTS OF CERTAIN PROBLEMS IN THE PATH-**

(98) **LOGY OF MENTAL DISORDERS.** EDWIN GOODALL, *Lancet*, 1914, Dec. 5, 12, and 19.

IN these three lectures an exhaustive study is made of the pathology as well as of certain forms of treatment of mental diseases. There is much in them of great interest to all psychiatrists.

R. DODS BROWN.

## Reviews

**THE VICIOUS CIRCLES OF NEURASTHENIA AND THEIR**  
(99) **TREATMENT.** JAMIESON B. HURRY. Pp. xv+90, with 5  
plates. J. & A. Churchill, London. Pr. 3s. 6d. net.

VICIOUS circles tend to occur in many diseases, but are particularly liable to develop in neurasthenia, the chronic and progressive character of which is in fact largely due to their establishment, since the fundamental disorder produces symptoms which maintain and aggravate the disease. Neurasthenia is here defined as a "chronic functional disorder due to exhaustion of the neurons, usually associated with impaired ideation," and it is pointed out that the term "vicious spiral" is in many respects more exact than vicious circle, although the latter term is regarded as too ancient to be discarded.

After a short chapter on the pathology of neurasthenia, the different circles are discussed under the headings of those associated (1) with psychoses, (2) with the vascular system, (3) with the respiratory system, (4) with the digestive system, (5) with the genito-urinary system, and (6) with the sense organs. There then follows a chapter on artificial circles, and another on the breaking of the circle, which may be done by (a) psychotherapy, (b) constitutional treatment, and (c) local treatment. The book might almost be considered a digest on the subject, as it consists mostly of a collection of the views of previous writers, the references to which are given on each page, thus adding greatly to its value. There is a good index, and five plates are given in which different circles are represented diagrammatically. Every one interested in the treatment of neurasthenia should be familiar with the contents of this book.

**MENTAL MEDICINE AND NURSING.** ROBERT HOWLAND CHASE.  
(100) Pp. xv+244. 78 illustrations. 1914. J. B. Lippincott & Co.,  
Philadelphia and London. Pr. 6s. net.

THIS is practically a small text-book intended for practitioners, students, and nurses, and being written with this double purpose it is, perhaps, unavoidable that its contents should prove to be rather unequal. The anatomy of the nervous system is briefly referred to. The chapters on the normal and the abnormal mind are accurate, adequate, and lucidly written. There are a few paragraphs on complexes, dreams, and autistic thinking.

Kraepelin's classification is used, and the description of the various forms of mental disease is short and to the point, though the existence of the Wassermann reaction is not even referred to under general paralysis. The author's remarks on the relation of the physician to the patient are excellent, and he rightly says: "One should view with grave misgiving the genuineness of convalescence when a patient, who otherwise appears to be well, denies in a positive manner that he has been in mental disrepair." In a book which is written for ready reference it is doubtful if the treatment of the various types of mental disease should not be more fully detailed under the various diseases, rather than in a general summary in which prophylaxis, hydrotherapy, rest (including the Weir Mitchell treatment), insomnia, hypnotics, food and feeding, exercise, occupation, suicidal and dangerous tendencies, seclusion and restraint, are all referred to. In his remarks on the signs of an overdose of sulphonal, surely prolonged drowsiness and unsteady gait would be more likely to attract the initial attention of both the physician and the nurse than the symptoms detailed by the author. The book contains an appendix on the more common poisons, a glossary of terms used in psychiatry, and numerous photographs, many of which accurately picture the mental affection of the subject, but there are also many only saved by their label from the certainty of being otherwise interpreted.

The volume is of handy size, printed in good type, and easy to read.

H. DE M. ALEXANDER.

**THE SALVARSAN TREATMENT OF SYPHILIS IN PRIVATE**  
(101) **PRACTICE, with some account of the Modern Methods of**  
**Diagnosis.** G. STOPFORD-TAYLOR and R. W. MACKENNA. Pp. 92,  
with 18 figs. 8vo. Wm. Heinemann, London. 1914. Pr. 5s. net.

A GOOD and concise account of the diagnosis of syphilis, and its treatment by salvarsan, is given here. The book is divided into four chapters. The first chapter deals with the cause of syphilis, and describes the three different methods of demonstrating the spirochæte, its cultivation, and serum diagnosis. The Wassermann reaction is then described, the authors having employed Fleming's modification, and using an alcoholic extract of guinea-pig's heart as an antigen. They found that it is not until the fifteenth to the seventeenth day from the time that a chancre appears that the blood-serum gives a positive reaction. The second chapter gives a brief account of "parasyphilis." The third is devoted to salvarsan. The methods of injection are described, the intravenous route being preferred. Veni-puncture, rather than exposure of a

vein and insertion of a cannula, is advised as most expeditious and cleanly. The patients were kept in bed for twenty-four hours after the injection, and no bad effects were observed in about 400 cases. The urine was then tested by Gutzeit's test, and a second injection was never given until all trace of arsenic had disappeared. Eye lesions were not considered a contra-indication. The last chapter deals with combined treatment, the authors emphasising strongly that an injection of salvarsan should be followed with ten or twelve weekly intramuscular injections of grey oil. Several illustrative cases are described, and the book concludes with nine plates, showing the result of intravenous injection of salvarsan in various syphilitic manifestations. No reference to neosalvarsan is made. The special value of the book is its essentially practical nature.

**INSANITY IN EVERYDAY PRACTICE.** E. G. YOUNGER. Third (102) edition. Pp. x+130. 1914. Baillière, Tindall & Cox, London. Pr. 3s. 6d. net.

THE aim of the author here has been to supply the general practitioner with a small book from which he could acquire the broad outlines of insanity, and the fact that a third edition has now been reached is evident that it fulfils a recognised want. The book is divided into two parts; the first is general, while the second discusses the various types and special forms of insanity. In this edition the section of general paralysis has been rewritten, while a page has been devoted to influenzal insanity, and a brief summary of the New Mental Deficiency Act added. The different forms of insanity are discussed briefly from the points of view of diagnosis, prognosis, and treatment, and illustrative typical examples are given. The style is clear and lucid, and is well adapted for the purpose to which it is intended. The statutory forms of the ordinary lunacy certificate and of the urgency order are given as an appendix. It appears to have been the first European work on this subject which has been translated into Chinese. The general practitioner, who has had neither the time nor the opportunity to see much mental disease, should find this book most useful.

**LEHRBUCH DER PSYCHIATRISCHEN DIAGNOSTIK.** Privat- (103) Dozent Dr ADALBERT GREGOR. Pp. 240. 1914. S. Karger, Berlin. Pr. M. 4.80.

THIS is an introduction to the employment of elaborate modern methods of investigation in cases of mental disease, and provides the student and practitioner with efficient help in the matter of

**diagnosis.** The first part of the book is taken up with the general principles of diagnosis, which are applied to particular diseases in the second. A glance at such a volume as this would convince the sceptical that in the matter of mental diseases the standard of examination and investigation is vastly higher now than in former years, and that their study is more than ever a subject by itself. Physical, physiological, and psychological tests are described by the author, and a useful appendix gives his scheme in a compressed and practical form. S. A. K. W.

### BOOKS AND PAMPHLETS RECEIVED.

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Kelynnack, T. N. "Human Derelicts." 1914. Charles H. Kelly, London. Pr. 5s. net.

Mott, F. W. "Nature and Nurture in Mental Development." 1914. John Murray, London. Pr. 3s. 6d.

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Symington, J. "On the Relations of the Inner Surface of the Cranium to the Cranial Aspect of the Brain" (*Edin. Med. Journ.*, 1915, Feb.).

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*The Training School Bulletin*, 1914, xi., Nov. and Dec.



# **Review**

of

# **Neurology and Psychiatry**

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## **Original Articles**

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### **EPILEPSY IN YOUNG ADULTS AND ADOLESCENTS, WITH REFERENCE TO A NEW TREATMENT BASED UPON PATHOGENESIS.**

By TOM A. WILLIAMS, M.B., C.M. (Edin.),

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#### **SOME PATHOLOGICAL FEATURES.**

It is supposed that a special irritability of the cerebral cortex is a prerequisite to the manifestation of epileptic convulsions. In favour of this hypothesis are invoked many facts. In the first place, it is frequent to find in the ascendants or collaterals of epileptics either epilepsy itself, or some other dyscrasia, often showing itself through the nervous system, whether in the life of relation by irritable or violent temper, eccentricity, feeble-mindedness, or what is loosely called neurasthenia and hysteria, or in the vegetative life itself as by a feeble body, of poor resistance to tuberculosis and acute infection, an addiction to drugs like alcohol, or an incapacity or unwillingness to work steadily or hard.

When analysed, these facts do not prove that the cerebrum itself is degenerate, for this interpretation does not take into account the bodily determinants of cerebation, such as the respiration, circulation, the metabolism of food, and the internal secretions, the disorder of any of which seriously impairs cerebral function.

I shall not enlarge upon this fruitful theme; for experienced clinicians will appreciate its importance at once, while for others a treatise would have to be written.

A second fact often used to support the hypothesis that epilepsy is a disorder of the cerebrum is its onset after injury or disease of the brain, such as is produced by tumour, sclerosed neuroglia, or vessels.

Even here we cannot in justice dogmatise, for we know that not every arteriosclerosis, cortical tumour, or blow on the head gives rise to convulsions by any means. So that we cannot without specific investigation exclude the likelihood of parabolic products being the real producer of the convulsions which occur. That such is the case even in these patients we have no proof, it is true, but presumptive clinical evidence offers itself. The case which follows is a common enough type to give good illustration.

#### EPILEPSY FROM VASCULAR CEREBRAL LESION REMOVED BY METABOLIC MEANS.

A man of 64, chief architect in the Indian Service, consulted me on 10th February 1910, having been sent by Dr Phillip Roy, because of the recent occurrence of epileptiform convulsions with loss of consciousness.

The first attack had occurred in May 1909, at an elevation of 12,000 feet, near Durango, while he was inspecting the school buildings there. He was unconscious for half an hour. The second attack occurred shortly after, upon leaving the train in Chicago, while making for the staircase. It lasted about an hour. A third attack took place in his office that July, lasting one and a half hours. The fourth, and last, had occurred two nights before his visit to me, while he was visiting a friend and sitting down. It lasted three hours.

The attacks are preceded by a creeping sensation in the left upper arm, passing slowly down to the hand, which becomes numb. In about fifteen minutes unconsciousness supervenes. The face is

said to be flushed, but he is uncertain whether there are convulsions, though others have told him that there are. The duration of the attacks was only surmised.

*Previous History.*—Scarlet fever at six, without bad sequelæ. An active living, healthy man, except for two years of asthma twenty-five years before, a result of constant attacks of catarrh. It was cured by working as a farm hand for three weeks. He smokes two cigars and a pipe a day. He took coffee, and was a heavy drinker, until after the attack; now he has ceased to take even tea. He has always been abstemious in eating, but has been fond of salty foods. He drank "when he felt like it." Since these attacks he has had a pain over the forehead when coryza occurred. As he had read that insanity might come on from this catarrh, he was at first a little anxious about his state, but soon steeled himself against it. The pain in the head was rather a feeling of depression and a grumbling pain like that of catarrh. The discharge was slight, and the headache disappeared when it ceased. He used to sleep quite well, but about the time of his attacks began waking in the early morning, and could not fall asleep again. This persisted. He had been recommended to eat more and to take fat meat, and this he has done.

#### PHYSICAL EXAMINATION.

*Reflexes.*—Knee kick, R. > L. Achilles reflex, R. > L. Triceps, L. > R. Radials equal. None markedly exaggerated. Plantar reflex is flexor. The left cremaster is absent.

*Sensibility.*—No abnormality in lower limbs to pain, touch, temperature, or attitudes, though the latter are sometimes wrongly named, but correctly recognised. Arms, perfect localisation of light touches, both segmentally and axially. Spacing sense of fingers normal. Other modalities normal, except sense of attitudes poor, especially in the left hand. No hemiopia or colour inversion of visual fields.

*Motility.*—Normal, but left fingers weaker than right. Diodocokinesis regular. Pupils contract promptly.

*Psychic Functions.*—He thinks his memory is weakened since the attacks. There are no disorders of speech. Emotionally, he has always been easily excited when there was a cause, and has been accustomed to occasional sadness.

*Diagnosis.*—The localisation of the aura in the left arm and

hand, along with the increase of the triceps reflex and the loss of the cremasteric, point to an organic perturbation of the sensorimotor area of the right hemisphere, probably mainly in or near the cortex of the central fissure, opposite the second frontal convolution. The cremaster governing fibres are, of course, attacked in some other situations.

As neoplasm and granuloma were each unlikely, and as the man's age is that of arteriosclerosis, of the state preceding which the recently acquired matutinal insomnia was indicative, I believed it wise, although lacking proof, to adopt the supposition of sclerogenetic toxicosis, and put it to the experimental proof of therapeutics. Accordingly, a diet light in proteins was ordered, and coffee and tobacco were forbidden. The result was confirmatory, as the patient, one year from the consultation, remained free from attacks and insomnia, and was perfectly well able to perform his very strenuous work, often in high altitudes.

I believe that the first attack was inaugurated in consequence of an ischemia of a part of the right Rolandic region, due to the heart, strained by the high altitude, not being able to keep full of blood a partially sclerosed vessel distributed to that area. The second attack was likewise due to a sudden demand upon the heart upon leaving the train after a very hot journey.

Thus, although a sclerosed area still remained, the fits ceased when the metabolism was rectified.

This is true not only of epileptic convulsions, but of many varieties of cerebral malfunction, such as vertigo, depressions, &c., concerning which I have already written ("Detection and Treatment of Neurological Phenomena Preceding Arteriosclerosis," *The American Practitioner*, New York, February 1914; *Month. Cyclopaedia*, 1911, &c.).

The above objections to the cerebral seat of epilepsy become pregnant in conjunction with the fact that in a perfectly healthy cerebrum, even in animals, a toxin, absinth, will invariably produce an epileptic convulsion.

To the exogenous character of the absinth poison as an illustration objection may be brought.

But in puerperal eclampsia we find a state where an endogenous toxin causes convulsion attacks quite like those found in epilepsy; and that these occur in spite of an undamaged cerebrum no one denies. So that we have in them examples of convulsion purely

functional, that is to say, occurring apart from structural changes in the cerebrum. Although in view of the possibilities suggested by alcoholic wet brain and uræmia, where the mechanical effect of œdema may play a part in the genesis of the convulsions, we cannot demonstrably postulate toxicosis as the direct cause of eclampsia, yet at least a remediable toxicity is the ultimate source of the convulsions, and there is no proof of œdema as the proximate source.

THE THEORY AS TO PATHOGENESIS, AND THEREFORE TREATMENT,  
OF EPILEPTIC CONVULSIONS.

That the substances at work in uræmic eclamptic fits are katabolised proteins, there is much evidence in the presence of these inabnormally large amounts in blood and urine of such patients. Should we not expect, then, that a similar failure of nitrogen metabolism may be the ultimate cause of idiopathic epilepsy?

If so, shall we not improve the condition of these patients by minimising the metabolic work to be done by them?

Now the standard diet of Vogt allows over 100 grams protein, and most diet customs approximate to this too.

But Chittenden<sup>1</sup> has shown that 50 grams is sufficient to maintain both bodyweight and muscular and mental efficiency, at least over many months. Shall we not find that patients who have convulsions when eating by custom or the Vogt standard cease to have them when their metabolic protein load is diminished to the Chittenden standard?

My cases may help to answer this question. Complete metabolic study would have been desirable. But with private patients and no laboratory collaboration, I have not found it possible hitherto. So this contribution is purely clinical, except in Case I., where some study of the renal efficiency supports the preceding argument strongly.

Of course, mere amount of intake is only one factor of health in metabolism. The integrity of the organs of digestion, of internal secretion and of excretion, is important, and of course the supply of oxygen to the tissues must not be forgotten. Hence exercise and general hygiene must not be neglected, even when a model diet is being followed.

<sup>1</sup> "Physiologic Economy in Nutrition," 1908.

Let me leave without development these physiological considerations and pass to clinical paradigms.

#### CASES OF EPILEPSY IN YOUNG ADULTS.

These consist of adolescents in whom one or at least a few convulsive attacks truly epileptic appeared to be brought on by metabolic disturbance, the treatment of which at once led to the disappearance of the attacks. In one instance, cessation of metabolic caution led to relapse, which was quickly terminated by the reassumption of care.

##### *Scarlatinal Nephritis followed by Epilepsy—Cessation of Attacks under Treatment.*

CASE I.—A girl, aged 14, was referred in January 1914 by Drs Spencer and Garnett because of epileptic attacks occurring at the age of 10 and 11½, and again three times during the winter of 1913.

She loses consciousness for less than a minute, bites her tongue, loses the urine, sleeps heavily for an hour afterwards, and has headache and is dizzy for some time after. The day preceding the attack the breath is exceedingly foul, and for some days there is a pustular eruption on the face; during the last summer this had been present on the feet.

No psychic disturbances were noticed before the attack; but she had been of irritable disposition until seeing a play, "The Dawn of To-morrow," illustrating a girl's bravery under misfortune. This stimulated her to better behaviour. She was a blue baby; and when 5 years old had scarlet fever (followed by a weak back). At 11, albumin was found abundant in the urine on several occasions. It is now reported to be very slight in amount. She had been dieted as follows:—

*Breakfast.*—Fruit, cereal, a pint of milk, one egg, brown bread.

*Lunch.*—Oysters, brown bread, milk, custard, or gelatine.

*Dinner.*—Fish, potatoes, milk, custard, or gelatine. She takes one and a half quarts of milk a day, and cocoa now and then. She drinks very little additional fluid, and takes no salt. She is never constipated and has not yet menstruated, although the breasts have developed.

*Examination.*—The tongue is clean; there is no visible anæmia

nor caries of teeth: nutrition is good; but the muscles are inelastic. Reflexes are normal. The heart is irregular, with exaggerated pulmonic second sound and slight hypertrophy of ventricles. She becomes livid when cold. Urine contains no albumin or casts; there is a strong indican reaction.

Estimation of the renal function by phenolsulphonephthalein showed 33 per cent. the first hour and 5 per cent. the second hour. This is distinctly below normal. (Dr Fowler by Geraghty's method.) Dr Frankland, by his own method, reported that the excretion began in five minutes and ended in three and a half hours, which he thought normal. Blood contained over six million red cells and an excess of hæmoglobin. The stools were scybalous.

*Treatment.*—The special diet which I recommend in accordance with the principles described in this article was prescribed, and continuance of school and play were urged.

Another attack occurred, and she became constipated, as the purgatives which she had occasionally taken were forbidden. Figs, however, easily remedied this.

8th March she was again seen. Reflexes were feeble; but she was in good spirits. The phthalein tests (Fowler) showed 35 per cent. the first hour, none in the second hour.

She was seen again 9th April, continuing well. On 23rd May Dr Frankland reported somewhat slow elimination, some of the phthalein showing at the fifth hour.

However, there have been no other attacks in spite of the fact that a week before this the breath became very foul and the child heavy, which the mother thought strongly suspicious. The diet was immediately restricted, for three meals, to fruit with milk and one slice of Graham bread alone, and two grains of calomel were given. Seen in September, the patient was thinner, brisker, and happier and better in every way, no more attacks having occurred.<sup>1</sup>

This case I interpret as a metabolic disturbance due to lowered renal function, probably from scarlatinal nephritis. Although the renal function does not improve, yet the special standard diet reduces to a minimum the toxicity of which the kidney must dispose; and hence accumulation is prevented, so that the fits no longer occur, in spite of the greatly lowered renal efficiency.

<sup>1</sup> In March 1915 the patient remained well, cheerful, and active, playing basket-ball at school without detriment.

*Epilepsy from Overeating.*

CASE II.—A clergyman's son, aged 16, was referred to me by Dr Claytor, 22nd January 1911. He had been a healthy boy until 9th January, when, while singing after lunch, he fell unconscious in convulsions, preceded by deviation of the jaw to the left. There was no escape of urine, but he thinks he bit the tongue.

There had been no convulsions in childhood; but transient strabismus had developed at four after chicken-pox.

While he was at boarding school, aged 9, nightmares had developed after the alarm caused by a negro gun-outrage. They were supposed to be due to sleeping on the back; and his father cured him by persuading him not to do so.

The family history was negative.

After the first attack, a systolic bruit was heard at the cardiac apex, which was to the left of the nipple. The urine was clear and without albumin.

*The Attack.*—A dazed feeling preceded a drawing of the mouth downwards, and deviation of the jaw, and a sense of falling: then consciousness was lost, he thinks for five minutes. He awoke tired and stupid, and was frightened for over a minute. This was the only fit.

He was sent to me because of his alarm at a conversation at lunch about a palsied doctor's twisted tongue. This caused him to flush and have a sensation as of another attack, which caused him to leave the table, saying, "That jaw reminded me of my fit. I wish I knew what was the matter with me." His whole attitude was one of great apprehension about his condition.

*Examination* showed diminution of deep reflexes and absence of the plantar reflexes, with, however, a prompt response of the tensor fasciæ latæ. The other cutaneous reflexes were prompt.

*Sensibility* was normal, and motility was unimpaired, except by the inferiority of the right diadocokinesis in a right-handed person. The visual fields were not inverted nor contracted; but the veins of the optic papillæ were perhaps rather wide.

He has grown 10 inches in two years; and he gained 10 lbs. in one month during the holidays, having eaten enormously of the dainties of the season. He had taken no exercise; and although



he had slept much, he had kept late hours and taken a good deal of beer and tobacco.

The *Diagnosis* was a functional epilepsy from disordered metabolism due to overeating, smoking, and drinking, with want of exercise in a rapidly growing boy.

*Treatment and Progress.*—He was prescribed moderation in eating and athletics, no tobacco or alcohol, and a loose collar and shirt. He was also reassured against his alarm. The inefficacy of the last advice was shown when he returned to school; for when the boys said "he looked bad," it affected him so that he wept and felt wretched for a long time. Furthermore, he had "a prickly feeling in the head, and felt thoroughly useless about 11 A.M." This he attributed to the poor ventilation in the schoolroom; and he felt very heavy upon waking in the mornings. He was reassured, and secured permission for fifteen minutes' recess out of doors every morning; and he left the track team for the gymnasium, the training for which prevented him eating between meals or smoking.

The diminution of the reflexes had ceased by 16th February; and the improvement of his hysterical attitude was shown by the fact that the paralysis of a master, although it made him fear an attack, caused no blushing. He has enjoyed good health since then. I have recently learnt of another attack, but cannot obtain answers to my inquiries.

*Epilepsy of Three Years' Duration Cured by Careful  
Metabolic Regulation.*

CASE III.—Man of 24 was referred by Dr Thomas Martin, September 1911, on account of convulsions, the first of which occurred at 3 P.M. in April 1908, after he had been up all night. He had been unconscious for a few minutes and languid for a few days. He returned to college, and six weeks later had a slight convulsion lasting for a minute after lunch. Knowing the attacks to be epileptic, he became very wretched, though otherwise in good health. While in the diplomatic service he was under the care of a consultant in London, and later went to Carlsbad, taking bromides all the time. Thence, in 1909, he went to South America and ceased the bromides. In October 1910 an attack occurred in his sleep after he had been to a race meeting for two days and had taken a good deal of alcohol; he felt dazed in

the morning. This alarmed him, and he resumed the careful regime he had formerly followed; but in February 1911 he began to walk in his sleep, and one day jumped over the banister.

He consulted Dr Pierce Bailey in New York, but had another attack while asleep in the train in the afternoon; but on 4th July he had an attack in the night after jumping horses at the show; 19th August, an attack at home after returning from the sea-shore; 7th September, after a day on train and motor; 23rd September, on arriving in Washington.

The attacks are like nightmares, they are without premonition, but one day he was dizzy several times before an attack. He does not bite his tongue nor micturate; but before losing consciousness he tries to rise from his pillow. He foams at the mouth, turns his head to the right, and makes a grunting noise; but only the first attack had been witnessed by others.

After the attacks there is dullness, followed by restlessness for a day or so. He may be irritable for days preceding and following the attacks. While in England he had dizziness, especially after eating, while reading or writing; when he would lose or fail to recall the sense of a word.

A year after leaving his London physician he had taken wine at meals, or "whatever was going"; but he had ceased wine since October 1910. His appetite is hearty and he eats fast. He is sometimes constipated. He was circumcised when ten days old. Nocturnal incontinence had occurred occasionally until nine, though he was trained before two. There were no convulsions in infancy. He was not a nervous child, and had always been of calm temperament and easy to manage. His birth was not difficult, but he has a very long head, which is not a family characteristic.

There is a history of sudden drop of pulse rate to forty, and of urine of high specific gravity; but all Dr Martin found was hyperacid urine, with specific gravity 1,017, a trace of indican, and an excess of HCl in the stomach.

My examination showed normal deep reflexes; but an absent plantar reflex except in the outer toes, which, however, extend at the distal joints, when Chaddock's mode of stimulation is employed, while they flex at the metatarsal joint. Other cutaneous reflexes are also diminished; but the pupil reactions are prompt and well maintained, and the sensibility and motility were unimpaired.

He was prescribed the model diet, and advised to take moderate and regular exercise; and a good prognosis was given, because his attacks were so evidently the consequence of metabolic disturbances, due on some occasions to over-exhaustion, and on others to the stagnation of the circulation due to a too sedentary position for a great many hours. He returned in December 1911, and had had no further attacks, in consequence of which there was much relief of the great anxiety which had made him miserable. The importance of perseverance in his treatment was urged upon him, as he was told that each relapse would be more difficult to control.

I hear that he has had no further attacks, and is active and happy, March 1914.

*Metabolic Migraine Resembling Petit Mal.*

CASE IV.—A bacteriologist, aged 30, was referred to me in the spring of 1912 by Dr Paul Johnston, because of attacks he called "bilious" (but not preceded nor accompanied by constipation), which produce headache preceded by numbness and pricking in the fingers, followed by dizziness, mental confusion, and foolish talk of paraphasic type, without loss of consciousness. These attacks have occurred every two or three months since the age of 22; they are of very short duration. There were no scotomata, but they were formerly accompanied by vomiting. The headache is of the splitting kind, lasts all day, and is followed by dullness and slowness of thought the day following. The capacity to concentrate his thoughts is increasingly impaired even between the attacks. He is at times irritable.

He has no bad habits; and apart from these attacks he is well and strong.

He received a blow on the left side of the head as a boy; and there is still a dent in the left parietal region, upon which side the headache more often occurs. He has a large appetite, which he says he controls: but he eats meat thrice a day, although he says sparingly. The blood pressure is not raised; the reflexes and sensibility are normal.

*Treatment and Progress.*—He was given the low protein "standard" diet. He wrote me the following winter: "Since I have reduced the amount of protein in my diet and increased the quantity of vegetables, I have had no recurrence of those spells."

Dr Johnston informs me that he remains well to date, three years later.

The relations between epilepsy of aberrant types and migraine are numerous; even instances where the two conditions have alternated have been reported. Gowers especially has collected many instances of transitional forms of the two conditions. The data of this paper seem to furnish a further resemblance between migraine and epilepsy so fundamental as a common pathogenetic factor; for patients subjected to a low protein dietary of the kind indicated above, either cease to have headaches, or to have them so mildly and rarely as to regard themselves as virtually cured.

A publication on this subject is in preparation.

#### EXPLANATION OF EFFECTS OF EMOTION.

The theory I advance is not inconsistent with the tendency, well known to psychiatrists, of emotion to precipitate convulsive attacks of truly epileptic nature in disposed individuals quite apart from hysteria.

The explanation is the interference of emotional reaction of an intense kind with nutrition. Physiological experiment has shown how rapidly the flow of salivary, gastric, and intestinal juice is suppressed in dogs by fear. Clinical observation is familiar with the production by emotion of the dry mouth, the stagnant stomach, profound constipation, the clay-coloured stool on the one hand; and on the other hand, of the vomiting, the lenteric diarrhoea, and the bilious stool. Cannon's experiment demonstrates the out-pouring of adrenal secretion during fright, and Crile's induction of hyperthyroidism is now classical; and every one is familiar with the cardiac excitation, respiratory disturbance, the sinking sensation of vasomotor paresis and asthenia, the forced urination produced by terror. The effects upon nutrition of such reactions as these must be very great; and indeed observation has already noted glycosuria among the effects of fear. So that it is inevitable that disturbances of protein metabolism must occur, which in some individuals are sufficient to fire the magazine required to produce a critical convulsion.

Thus, in emotion we are dealing not with a vague cause which cannot be analysed, but with a definite reaction possible to express in terms strictly material. This shows emotion to be merely an accessory, rather than an essential or primitive cause of epilepsy.

## Abstracts

### ANATOMY.

#### **MAUTHNER'S CELL AND THE NUCLEUS MOTORIUS TEGMENTI.**

(104) GEORGE W. BARTELMEZ, *Journ. of Comp. Neurol.*, 1915, xxv., Feb. 13, p. 87 (13 figs.).

THE term nucleus motorius tegmenti is here used to designate the column of cells which lies in the ventro-medial region of the medulla oblongata, and with the abducens nucleus constitutes the somatic motor column of the bulb. It may be divided into cell groups which correspond to the various motor nuclei of the medulla oblongata, and the relations with these nuclei represent the primitive connections of the groups. The groups have secondarily acquired relations with the primary sensory nuclei which lie at the same transverse levels, and have differentiated accordingly. This connection is interpreted as an adaptation for rapid reflexes between the sensory centres and motor centres of the somatic musculature.

The axones of the larger cells of the nucleus comprise the greater part of that portion of the fasciculus longitudinalis medialis which goes to the spinal cord.

The motor tegmental nucleus is best developed in the region of the acoustico-lateral nuclei. Certain cells here have migrated towards the acoustico-lateral decussation, from which they receive collateral fibres, and have increased in size, being known as Mauthner's cells. They are homologous with the Müller's cells of cyclostomes. They are so large as to form excellent material for the study of the structure of the cytoplasm, being in fact amongst the largest and most highly differentiated nerve cells known.

The primitive Teleostean Mauthner's cell is not unlike a spindle bent to a right angle at the middle. The lateral limb is directed caudally and the ventral limb rostrally. These are long, gigantic, thick dendrites. The *lateral* one is in direct relation to the eighth root, the synapse being in the midst of Deiters' nucleus, where the dendrite becomes enveloped in a sheaf of thick eighth root fibres which end in club-like expansions upon its surface. No evidence of fusion was found, the two plasma membranes being merely in contact. These club-like expansions are a unique feature of the siluroid brain. The *ventral* dendrites may be one, two, or more. When two are present, they have different fibre connections. The superior dendrite is characterised by its close

relation to the nucleus princeps V. The inferior dendrite is intimately related to the ventral acoustic nuclei. The axone hillock is surrounded by a dense substance known as the axone cap, through the middle of which the axis cylinder process passes. It is a peculiar synapse, not known in any other nerve cell, and is composed of (1) collaterals from various neighbouring fibres, (2) minute dendrites from the underlying region of the cell body, and (3) supporting elements. It is primarily an acoustico-lateral connection.

Mauthner's cell is a nucleus in itself, and at least twelve different types of fibres have endings in the pericellular net. Its chief connections are (1) the vestibular nerve and its nuclei, (2) the acoustico-lateral nuclei, (3) the fasciculus longitudinalis medialis, and (4) the tecto-bulbar system. These all bring data concerning the orientation of the animal in space. These cells represent a shortening of the primitive reflex path, and are association cells of three neurone reflexes having short latent periods. They are concerned with equilibratory and auditory reflexes where speed and precision are very important, and which allow the animal to keep perfect control of its equilibrium in the most rapid and intricate movements.

A. NINIAN BRUCE.

## PHYSIOLOGY.

**THE ACTION OF GLANDULAR EXTRACTS ON THE SECRETION**  
(105) **OF CEREBRO-SPINAL FLUID.** CHARLES H. FRAZIER and  
MAX MINOR PEET, *Amer. Journ. Physiol.*, 1915, xxxvi, March,  
p. 464 (10 figs.).

FROM experiments on dogs the authors conclude:—“(1) Saline extracts of pancreas, spleen, kidney, liver, ovary, and testes do not influence the rate of secretion of the choroid plexus; (2) the apparent increased rate after the injection of extracts of these glands is mechanical rather than a secretory effect; (3) this mechanical effect is directly due to the fall in arterial blood pressure, which increases the pressure in the cranial venous sinuses, thus forcing out the preformed fluid in the ventricles and cisterna magna; (4) brain extract causes an increase in secretion independent of blood pressure changes; (5) thyroid extract, either from fresh glands or the commercial desiccated beef preparation, is the only glandular substance which has a specific inhibitory effect on the secretory activity of the choroid plexus, quite independently of blood pressure changes.”

LEONARD J. KIDD.

**THE EFFECT OF PARTIAL ADRENAL DEFICIENCY UPON  
(106) SYMPATHETIC IRRITABILITY.** R. G. HOSKINS, *Amer. Journ. Physiol.*, 1915, xxxvi., March, p. 433.

SUMMARY and conclusion:—"From one-half to seven-tenths of the adrenal tissue was removed from dogs in various cases, at a single operation. At intervals of one to eight days after the operation the blood pressure and the vasomotor reaction to nicotine were decreased. The reaction to adrenalin was not similarly affected. Partial adrenal deficiency therefore results in a depression of the irritability of the sympathetic nervous system proper. This depression is probably only one phase of a generalised interference with fundamental metabolism."

LEONARD J. KIDD.

**EXPERIMENTAL HYPERTHYROIDISM.** W. B. CANNON, C. A. L. BINGER, and R. FITZ, *Amer. Journ. Physiol.*, 1915, xxxvi. (*Proc. Amer. Physiol. Soc.*, Dec. 28, 1914), March, p. 363.

THE anterior root of the right phrenic nerve of the cat was experimentally fused with the right cervical sympathetic cord. Thus, after regeneration had occurred, there was delivered to neurones in the superior cervical ganglion a volley of impulses every time the animal breathed. The operations were performed early in May; in October four of six animals were still alive. All showed marked tachycardia, loose bowels, falling of hair of neck and back, and they acted as if afflicted with pruritus of head and toes: they were unusually excitable, rushing away when handled or petted. There was greatly increased loss of heat per kilo per twenty-four hours in the operated cats: the one which showed the greatest increase lost much weight and died: autopsy showed that its adrenals were nearly three times the normal size. In dim light the cats' pupils were larger on the side of operation: one showed exophthalmos and respiratory hippus. The authors are planning a further series of experiments by this phrenic-fusion method, with regard not only to the thyroid gland, but also other organs innervated by the autonomic system.

LEONARD J. KIDD.

## PSYCHOLOGY.

**ON PSYCHOLOGICAL UNDERSTANDING.** C. G. JUNG, *Journ. Abnorm. Psychol.*, ix., Feb.-March, p. 385.

THIS paper does not lend itself to abstraction.

H. DE M. ALEXANDER.

**PROFESSOR JANET ON PSYCHOANALYSIS—A REJOINDER.**

(109) ERNEST JONES, *Journ. Abnorm. Psychol.*, 1915, ix., Feb.-March, p. 400.

A CRITICISM of Professor Janet's paper on "Psychoanalysis" on p. 153, vol. ix., of the *Journal of Abnormal Psychology*.

H. DE M. ALEXANDER.

**STAMMERING AS A PSYCHONEUROSIS.** ISADOR H. CORIAT,

(110) *Journ. Abnorm. Psychol.*, 1915, ix., Feb.-March, p. 417.

THE various modern theories of stammering, such as transient auditory amnesia, spastic neurosis of speech, localised motor obsessional neurosis, or as a form of hereditary tic, leave much to be desired. The only adequate explanation of stammering, an explanation which stands the ætiological and therapeutic test, is the psychogenetic one; namely, we are dealing with a form of anxiety neurosis which manifests itself mentally as morbid anxiety and a consequent dread of speaking; and physically as the usual somatic accompaniment of morbid anxiety, with the added mental tic of the motor speech mechanism.

Phonetic training can accomplish little, or at the most temporary results in a stammerer, unless we know his complexes, conscious and unconscious, and his various dreads and situation phobias.

H. DE M. ALEXANDER.

**PATHOLOGY.****A RAPID METHOD FOR STAINING MEDULLATED FIBRES,**

(111) **STAINING SIMULTANEOUSLY THE CELLULAR LIPOIDS.**

(*Les méthodes rapides pour la coloration des fibres à myéline.*

*Coloration simultanée des lipoides cellulaires.*) ALBERTO ZIVERI,

*Rev. Neurol.*, 1914, xxii., Fév. 15, p. 173.

THE tissue is fixed in 10 per cent. formalin for 2 or 3 days (or up to 2 years), and sections cut by the freezing method. The sections are then placed in a solution of one part of ferric chloride to four parts of distilled water. After 24 to 48 hours in this solution they are removed, thoroughly washed, and placed in a 1 per cent. alcoholic solution of hæmatoxylin, to which an equal quantity of distilled water has been added, and a few drops of acetic acid. They are stained here for several hours and differentiated in the above solution of perchloride of iron, only now diluted three times, until the grey and white matter stand out distinctly. They are then washed thoroughly, dehydrated in alcohol, xylol, and mounted in balsam.

If it be desired to stain at the same time the cellular lipoids, it is only necessary to place the sections after cutting into a



solution of 0.15 per cent. of chromic acid before transferring them to the iron perchloride solution, in which they remain from 8 to 10 hours. The myelin of the fibres and the granules in the nerve cells stain blue, the granular corpuscles stain blackish or brownish, probably on account of differences in the composition of their proteids.

A. NINIAN BRUCE.

**THE PATHOLOGY OF TABETIC OCULAR PALSY, WITH RE-**  
(112) **MARKS ON THE RELATION OF SYPHILIS TO THE**  
**SO-CALLED PARASYPHILITIC DISEASES.** W. G. SPILLER,  
*Journ. Nerv. and Ment. Dis.*, 1915, xlii., Jan.

THE case is reported of a man who, in addition to presenting the other characteristic signs of tabes dorsalis, had a total internal and external ophthalmoplegia of both eyes with paralytic divergence. The iridic reaction was lost. The optic nerves were partially degenerated.

The autopsy showed the usual changes of tabes in the posterior lumbar roots and cord.

Each oculomotor nerve showed much lymphocytic infiltration, and was greatly degenerated. The oculomotor nuclei were greatly atrophied, and contained few nerve cells, and the oculomotor fibres within the cerebral peduncles were much fewer than normal. The Edinger-Westphal nuclei were much better preserved than the other portions of the oculomotor nuclei.

The troclear nuclei were atrophied, the left more than the right; this was also the case with the abducent nerves, the left being more atrophied, and showed more lymphocytic infiltration. The above findings in regard to the abducent nucleus and nerve would seem to indicate that the syphilitic process was primarily in the nerve rather than the nucleus, and would make a distinction between the ocular palsies of tabes and syphilis unreliable.

Most other authors who have paid attention to the pathology of ocular palsies in tabes and syphilis have believed that tabetic palsies were usually of nuclear origin, while those of brain syphilis were usually from nerve degeneration.

D. K. HENDERSON.

## CLINICAL NEUROLOGY.

**STUDY OF THE REFLEXES.** (*Études sur les réflexes.*) NOICA, *Rev.*  
(113) *Neurol.*, 1914, xxii., Mars 30, p. 402.

IF an Esmarch bandage be applied to the inferior extremity, it will be found that during the duration of the anæmia the tendon reflexes disappear, the Achilles jerk being lost before the knee jerk. On removing the bandage the reflexes reappear in the

reverse of the order of their disappearance, *e.g.*, the knee jerk returns before the Achilles jerk. The condition thus follows the affection of the arterial circulation. During the period that the hyperæmia lasts, the tendon reflexes are increased.

When the knee jerk is absent from anæmia, a contralateral adductor jerk is found, which disappears when the anæmia passes off and the knee jerk returns. The production of a tendon reflex on one side of the cord therefore normally exerts an inhibitory effect upon the tendon reflexes of the opposite side of the cord; it also exerts a moderating influence upon the tendon reflexes on the same side of the cord but related to a lower segment. The normal action of the pyramidal tract in moderating the tendon reflexes is thus easy to understand, since the pyramidal tract may be considered as a superior reflex arc, and thus, if injured, the lower reflex activities become exaggerated.

A. NINIAN BRUCE.

**CONJUGATE MOVEMENTS.** (*Sur les mouvements conjugués.*) J. (114) BABINSKI and J. JARKOWSKI, *Rev. Neurol.*, 1914, xxii., Jan. 30, p. 73.

ONE of the causes of the interference in function in affections of the pyramidal pathway is the difficulty, or impossibility, of performing simple isolated movements. When the patient flexes his knee or hip, flexion of the ankle also occurs (Strumpell's tibialis phenomenon). A corresponding condition is met with in extension of the limb. The cause of such conjugate movements in the lower limbs is here discussed, and it is shown that the explanation is to some extent a physiological one, since it depends upon the different muscular connections. Some muscles are attached to three different segments, and others to two different segments separated by an intermediate segment, and are thus capable of acting on two joints at one time.

The effect of the pyramidal lesion is to produce a slight permanent contracture, which increases the tension of the muscles and prevents the relaxation of the antagonists which is an essential condition for the performance of simple isolated movements. In those cases where contracture is not present a diffusion of the nervous impulse in the antagonists occurs, producing a comparable effect.

A. NINIAN BRUCE.

**THE PNEUMOGRAPH: A NEW INSTRUMENT FOR RECORDING** (115) **RESPIRATORY MOVEMENTS GRAPHICALLY.** A. KNAUER and W. J. M. MALONEY, *Journ. Nerv. and Ment. Dis.*, 1914, xli., Sept., p. 567.

THE instrument is carefully described, and two diagrams are reproduced. The instrument has undoubtedly many points of advantage over the instruments at present in use.

It is claimed that the pneumograph is of service in all psychogenic speech disturbances, such as stammering, aphonia spastica, &c., where breathing exercises are indicated; in the treatment of obsessions and psychogenic fears, which can be beneficially influenced by methodical regulation of the rate and character of the respiratory movements; and in the teaching of conscious control of muscular movements. The machine is also of use in obtaining an index to emotional reactions in mental states. The amplitude, rate, and rhythm of breathing constitute a much more sensitive indicator of the emotions than the changes in facial expression or in cardiac action.

This pneumograph was made by the Medical Machinery Company, Detroit, Michigan. D. K. HENDERSON.

**GENERALISED HERPES ZOSTER.** (*Herpes zoster generalisatus.*) (116) A. TRÝB, *Dermat. Wochenschr.*, 1914, lix., p. 983.

A MAN, aged 60, the subject of pulmonary tuberculosis, developed left thoracic zoster, which was followed a few days later by generalisation of the vesicles. A large area of the affected skin became gangrenous, but recovery finally took place.

J. D. ROLLESTON.

**HERPES ZOSTER FOLLOWING ARSENIC.** R. C. FINDLAY, *Journ. Cutan. Dis.*, 1914, xxxii., p. 794.

ON the day after the nerve in his left lateral incisor had been killed by arsenic, a man felt some pain in the tooth, and on the following day developed herpes extending from the point of the chin to the lobe of the ear. Neuralgia persisted for six months.

J. D. ROLLESTON.

**OCULAR COMPLICATIONS IN TYPHOID FEVER.** (*Complicaciones oculares en la fiebre tifoidea.*) D. DE CAVALT, *Policlínica*, 1915, iii., p. 3.

A BRIEF account of the following complications: acute and sub-acute irido-cyclitis, neuro-papillitis, neuro-toxic keratitis, purulent irido-choroiditis, retro-bulbar neuritis, ophthalmoplegia externa, embolism of the central artery of the retina, amblyopia, and asthenopia.

The author states that those complications are more frequent than is supposed. They are erroneously regarded as concomitant affections, whereas they are really ocular localisations of the typhoid bacillus or its toxins.

J. D. ROLLESTON.

**TEMPORARY BLINDNESS CAUSED BY EXPLOSION OF A SHELL**

(119) **CLOSE AT HAND.** (Cécité temporaire provoquée par l'éclatement d'obus à proximité.) O. CROUZON, *Bull. et mém. Soc. méd. Hôp. de Paris*, 1915, xxxix., p. 57.

A RECORD of three cases in soldiers. The sudden onset, preservation of the pupillary reflex, and normal fundus present in each case constituted the triad of symptoms described by Dieulafoy as characteristic of hysterical blindness.

It is also possible that the blindness was similar to that seen after an eclipse of the sun, owing to the dazzling light caused by the explosion of the shell.

J. D. ROLLESTON.

**ON A CASE OF PERFORATING ULCER WITH NEURINOMA OF**

(120) **THE ANTERIOR TIBIAL NERVE.** (Über einen Fall von Ulcus perforans mit Neurinom am Nervus tibialis.) I. SÆVES, *Arch. f. Derm. u. Syph.*, 1914, cxx., p. 621.

A MAN, aged 54, developed a perforating ulcer of the left sole. Wassermann's reaction was positive. The left foot was amputated above the malleoli, and a neurinoma was found on the anterior tibial nerve in the amputated part, in the neighbourhood of the cut surface.

J. D. ROLLESTON.

**MEDULLARY COMPRESSION BY CYSTIC ARACHNOIDITIS.**

(121) **LAMINECTOMY. RECOVERY.** (Compression médullaire par arachnoïdite cloisonnée. Laminectomie. Guérison.) GEORGES BOUCHÉ, *Rev. Neurol.*, 1914, xxii., Juillet 30, p. 69.

A MAN, aged 27, suffered from typhoid fever at the age of 3 years, recovering after symptoms of meningo-myelitis. For the last two years he complained of rheumatic pains in the vertebral column. Four months ago he suddenly developed trembling and weakness of both lower limbs, without fever and with difficulty in micturition and constipation.

On examination he presented a spastic paraplegia with the following symptoms: (1) Anæsthesia below the umbilicus, incomplete and variable, but never higher than the tenth dorsal segment; (2) presence of both superior abdominal (D viii. and D ix.) and epigastric reflexes (D vii. and D viii.); (3) absence of inferior abdominal reflex (D x.-xii.); (4) presence of knee jerks (L<sub>2</sub>-L<sub>4</sub>); (5) absence of cremasteric reflex (L<sub>1</sub>-L<sub>2</sub>); (6) partial anæsthesia of L<sub>3</sub>; (7) no sensory involvement below L<sub>3</sub>. The

upper limit of involvement was D x. and the lower limit L ii. As D x. corresponds to the 8th dorsal vertebra and L ii. to the 12th dorsal vertebra, laminectomy was performed at the level of the 9th and 10th dorsal vertebræ. An X-ray showed nothing abnormal, and lumbar puncture gave issue to a turbid fluid, under normal pressure, but containing albumen and lymphocytes. The Wassermann reaction was negative in the blood and in the cerebro-spinal fluid.

At the operation an arachnoid cyst was found at the level of the 9th dorsal segment. Recovery was complete, and the importance of early operation in such cases is emphasised.

A. NINIAN BRUCE.

**SPINAL DECOMPRESSION IN MENINGO-MYELITIS.** A. S. (122) TAYLOR and J. W. STEPHENSON, *Journ. Nerv. and Ment. Dis.* 1915, xlii., Jan.

THE authors have had four cases in which operation was done, in three of which the results were strikingly satisfactory. These results raise the question, whether in selected cases decompression will not only greatly shorten the period of invalidism, but also very considerably enhance the completeness of recovery.

A careful search of the literature since 1907 resulted in finding only one other case in which an operation was performed. This was done in 1909 by Krause, and the clinical history, the operative findings, and the principles of operative treatment, were nearly identical with those in the series reported.

In each case the onset was in the form of severe neuralgic root pains, referred to a fairly definite cord level. In three cases motor disturbances, loss of sphincter control, and the other phenomena indicative of a transverse lesion of the cord were present; in the fourth case there were no motor or sphincter disabilities.

In each case the cord was exposed by a unilateral laminectomy. The cord was very much congested, and was obviously swollen, but not sufficiently to fill out the dural canal.

In case 1 operation had no effect, and death occurred on the twenty-fourth day after operation.

In the remainder of the series the improvement was prompt and remarkable. Within four to eleven days the pains and objective sensory disturbances had largely disappeared, and motor power and sphincter control returned.

The authors believe that decompression acts by causing an improvement in the local circulation, with resulting more rapid absorption of the inflammatory infiltration, and return of function in the damaged areas of the cord.

D. K. HENDERSON.

**COMPRESSION OF THE SPINAL CORD BY AN EXTRA-DURAL  
(123) TUMOUR: INTERMITTENT PARAPLEGIA: OPERATION.**

(Compression de la moelle par tumeur extra-durée-mérienne: paraplégie intermittente: opération extractive.) J. BABINSKI, E. ENRIQUEZ, and J. JUMENTIÉ, *Rev. Neurol.*, 1914, xxii., Fév. 15, p. 169 (2 figs.).

A MAN, aged 45, developed neuralgic pain in the right eighth intercostal space six years previously. This lasted a week or so, and then disappeared, recurring after about two months' interval. About two years later he noticed weakness in his left leg, following a more severe attack. This also disappeared in a fortnight, but returned after each attack of pain, until a year later, after an attack, the left leg became completely paralysed and the right leg became insensible to heat and pain. Complete recovery took place about three weeks later, but four months after this intense pain suddenly developed, with paralysis of both legs. This remained about a month and then gradually improved. When examined in July 1912 he could walk unassisted, but the gait was unsteady; the left leg was weak, the right leg was not much affected, and the upper limbs were normal. There was a double Babinski response, the knee and ankle jerks were exaggerated, the middle and lower abdominal reflexes absent, the right cremasteric reflex was absent, the left weak, and the epigastric reflex weak on the right side. The third, fourth, and fifth sacral roots had normal sensibility, but there was hypoanæsthesia, especially on the right side above this, extending as far up as the eighth dorsal root. On 14th July he developed violent pain in the right side and lumbar region, and the legs became paralysed, with complete retention of urine. A tumour was diagnosed at the level of the eighth, ninth, tenth, and eleventh dorsal segments, and operation attempted. The patient had an attack of syncope during the operation and died later. At the autopsy an elongated tumour, 8 cm. long, was found outside the dura mater, which proved on examination to be a round-celled sarcoma.

A. NINIAN BRUCE.

**SPINA BIFIDA.** NORMAN SHARPE, *Annals of Surgery*, 1915, lxi., Feb., (124) p. 151.

THE causes of spina bifida are still unproved. Embryologists consider it is due to failure of the mesoblastic plates, in which the bony laminae of the spine are developed, to close over the spinal canal, thus leaving a gap or defect. Most surgeons, however, attribute the condition to an abnormal accumulation of cerebro-spinal fluid in early foetal life, which by exerting pressure prevents the coming together of the mesoblastic plates containing

the rudimentary laminae, and thus produces a gap or defect in the spinal canal. The author believes the latter theory to be the true one. He points out that the choroid plexuses are formed by the second month of foetal life, so that the cerebro-spinal space contains fluid before the cord and skin are separated by the mesoblast, which should occur in the third month. Therefore any undue pressure in the spinal canal will affect the region of latest closure, *i.e.*, the lumbosacral region. This is the region favoured by spina bifida, as 86 per cent. of cases occur here, 9½ per cent. in the cervical region, and 4½ in the dorsal region, which closes earliest. The frequent presence of hydrocephalus is also indicative of increased secretion of cerebro-spinal fluid. The author performed lumbar laminectomy in dogs, only the superficial tissues being sutured over the defect. Large areas of the skull were then removed, and the wounds allowed to heal. External pressure over this area caused choked discs, and in one case marked bulging of the spinal membranes through the laminectomy cleft was found at the autopsy. In one guinea-pig and two rabbits, injection of 2 drachms of salt solution in the cervical region after laminectomy in the lumbosacral region produced protrusion of the membranes through this cleft. This does not, of course, prove the cause of spina bifida, only that it could be caused in this manner.

The varieties of spina bifida are :—

1. *Rhachischisis*.—This is the most extreme form, because here the cord is spread out and exposed, and the central canal open. Such cases live only a few days at most.

2. *Myelomeningocele*.—This is the most frequent type, and comprises 70-80 per cent. of all cases. There is usually a fairly large bony cleft which can be felt, the tumour is sessile, and has a membranous apex; the tumour is congenital, and in the middle line, pressure causes a decrease in size with bulging of the fontanelle, and the tumour becomes tense on coughing or crying. Very few cases live beyond five years if untreated.

3. *Spinal meningocele* occurs in 8-12 per cent. The sac has usually a narrow base, is rarely pedunculated, is usually covered entirely by normal skin, and the nerve supply to the lower extremities is usually free from involvement.

4. *Syringomyelocoele* is very rare, only being found in 1-2 per cent. of cases. It is due to pressure exerted by an abnormal amount of fluid in the central canal of the cord, and thus forcing the posterior half of the cord through the bony defect.

5. *Anterior spina bifida* is also rare. The protrusion here

extends forward between the two halves of the bodies of the vertebræ. The sac is thus found in the abdomen or pelvis. As a rule no posterior deformity of the arches is present. Diagnosis is difficult, and all cases operated upon reported up to date have died.

6. *Spina bifida occulta* is a form where there is a cleft of the bony arches but no protrusion. The diagnosis depends on the symptoms of nerve involvement, and on the X-ray.

Six cases are described.

A. NINIAN BRUCE.

**TENDON FIXATION FOR DEFORMITY RESULTING FROM**  
(125) **PARTIAL PARALYSIS.** W. E. GALLIE, *Annals of Surgery*, 1915,  
lxi., Jan., p. 94 (1 fig.).

A BOY, aged 5, had had poliomyelitis two years before, resulting in paralysis of the right lower extremity. He recovered gradually and could walk, although with much disability, on account of a residual paralysis of the calf muscles and a complete paralysis of the tibialis posticus. On examination the calf muscles had about one quarter of the normal power, the tibialis posticus no power at all, and the peronei, tibialis anticus, dorsi flexors, and plantar flexors of the toes about normal power. The result was a moderate calcaneovalgus, the patient walking on his heel and not using the power persisting in the calf.

Tendon fixation was decided upon. The sheath of the tendo Achillis was split, and the tendon split into an anterior and a posterior half down to the os calcis. The anterior half of the tendon was then cut free from the muscle. The posterior surface of the tibia was then exposed and the periosteum divided vertically for three inches; it was then reflected, and a piece of bone the thickness of the half tendon removed. The tendon was laid in the trough, drawn taut to produce a slight equinus, and sewn solidly in place. The peronei tendons were then transplanted into the os calcis, and finally a fixation was done on the tibialis posticus tendon to prevent the valgus deformity, the tendon being buried in the internal malleolus. The plaster was removed two months later, and it was found that while dorsiflexion beyond a slight obtuse angle was impossible, the patient was able to plantar-flex the foot strongly by the combined action of the calf muscle and the transplanted peronei. The deformity and disability were overcome without interference with the power present. With the assistance of a Whitman plate the patient walks nearly normally.

A. NINIAN BRUCE.



**THE STUDY OF A CASE OF THE ADULT TYPE OF POLIO-  
(126) MYELITIS AND OF A CASE OF ACUTE ASCENDING  
PARALYSIS OF THE TYPE OF LANDRY.** H. C. GORDINIER,  
*Journ. Nerv. and Ment. Dis.*, 1914, xli., Oct.

THE author emphasises the rather loose way in which the term "Landry's paralysis" has been applied, and in opposition to the view that it is simply a severe acute form of poliomyelitis advances certain differences. The severe acute forms of poliomyelitis with widespread motor paralysis are ushered in with severe constitutional symptoms, high fever, severe headache, often with stiffness or rigidity of the neck, backache, and pain in the limbs. The prodromal period of Landry's paralysis is, on the other hand, very much less marked, and is often missed. While the beginning of paralysis in the latter disease may be abrupt, it is usually symmetrical and rapidly ascending, or very rarely descending in type, whereas in poliomyelitis the paralytic phenomena in the great majority of cases are less retarded, usually occurring simultaneously, following directly in the wake of the severe prodromal symptom; it is usually asymmetrical, and certain muscle groups usually continue to show atrophy and distinct electrical reactions. This last statement is usually in sharp contrast to what is found in the complex of Landry.

Pathologically, while the changes in the two conditions are quite similar both in location and type, they are very much less intense in Landry's paralysis than in poliomyelitis, and the small, mononuclear, round cell perivascular infiltration which is so characteristic of the latter disease, is missed in many of the true cases of Landry's disease.

Two cases are reported.

D. K. HENDERSON.

**MUSCULAR HYPERTROPHY FOLLOWING PHLEBITIS.** (Hyper-  
(127) trophie musculaire post-phlébitique.) O. CROUZON, *Bull. et mém.  
Soc. méd. Hôp. de Paris*, 1915, xxxix., p. 59.

IN the course of his examination of about 40,000 men, Crouzon found that hypertrophy following phlebitis of the lower limbs was fairly frequent. The calf muscles were affected, especially the gastrocnemius and soleus. This hypertrophy was not accompanied by infiltration of the skin of the calf, ankle, or foot. It was often associated with varicose veins, and disturbances of the tendo Achillis reflex. It might produce weakness of the calf, but in some cases no disability resulted, and the condition was compatible with active military service.

J. D. ROLLESTON.

**A NEW (FAMILIAL) FORM OF PROGRESSIVE SPINAL**  
 (128) **MYOPATHY.** CHARLES I. DANA, *Journ. Nerv. and Ment. Dis.*,  
 1914, xli, Nov., p. 681.

A FAMILIAL form of chronic anterior poliomyelitis is described which begins in persons after middle life, is progressive, and fatal in about one year. The author has no data to prove definitely that the lesion is an anterior poliomyelitis, and it may be that the process is a degenerative one. Clinically, one group of spinal motor cells seem to be destroyed one after another, and a rather sudden paralysis occurs followed by atrophy.

The author has seen only one case, but from this patient he obtained a history of nine other cases, showing that a trouble similar to her own had already run through three generations.

The patient was an unmarried woman, aged 53 years, who, in January 1913, noticed a weakness in the left thigh. This weakness increased, so that in April 1913 she walked with a limp, had difficulty in going upstairs, and was easily fatigued. She had an atrophy of the extensors of the left leg, and there was some atrophic weakness in the power of extending and flexing the left foot. There was a distinct reaction of degeneration in the left quadriceps femoris. The left knee jerk and both ankle jerks were absent.

The patient's condition gradually got worse, and in June both thighs showed more atrophy, and weakness had developed in the fingers of the left hand.

Electrical examinations showed degenerative reactions partial or complete in the sartorius, quadriceps femoris, rectus femoris and vastus internus.

She died in November—ten months after the beginning of her disease—probably from a bulbar paralysis.

Her maternal grandmother had the same disease, and died of it in her forty-first year. Her mother died of this progressive paralysis at the age of 47.

Three maternal aunts and a nephew died of the same condition. In addition, three sons of the grandmother's sister were affected in the same way.

D. K. HENDERSON.

**GANGRENE WITHOUT ORGANIC VASCULAR DISEASE.** L.  
 (129) BUEGER and A. OPPENHEIMER, *Med. Record*, 1914, lxxxvi., p.  
 1083.

A RECORD of two cases in men, aged 40 and 50 years respectively. The first case seemed closely related to Raynaud's disease, and the second belonged to the group of acro-asphyxia chronica. In

neither case could lesions be found in the nerves, arteries, or veins that could be held responsible for the gangrene, which in both cases was limited to the toes. J. D. ROLLESTON.

**SPASMODIC CLOSING OF CEREBRAL ARTERIES IN RELATION**  
(130) **TO APOPLEXY.** ALFRED GORDON, *Journ. Nerv. and Ment. Dis.*, 1914, xli., Aug.

THE author has observed fourteen cases which have presented such a characteristic clinical picture that the question of temporary closing of cerebral arteries may be answered in the affirmative. Six of these patients are still living; eight have died; and in all an autopsy was performed. The condition given rise to is analogous to "intermittent claudication." Intermittent, temporary, or transient attacks of hemiplegia or monoplegia may occur, which may or may not be accompanied by transitory aphasia. Instead of complete motor hemiparalysis there may be only hemiparesis or a very slight weakness. Sometimes there may be repeated attacks of paresthesia on one side, and each sensory attack usually leaves a slight feebleness on the same side.

In the author's series of cases arterio-sclerosis was evident in almost every instance. D. K. HENDERSON.

**CONTRIBUTION TO THE STUDY OF THE STRUCTURE OF**  
(131) **ENCEPHALOCYSTOCLE.** CARLO SAVINI, *Annals of Surgery*, 1915, lxi., Jan., p. 10.

A CHILD, 15 days old, was admitted to hospital on account of a "lump" at the back of the head. At birth this lump was about the size of a hen's egg, and had gradually increased in size until now it was about twice the size of the child's head. It was connected to the head posteriorly by a long pedicle round the site of the external occipital protuberance. As a small rounded area was inflamed and necrotic, operation was decided upon. About 1,000 c.c. of serosanguinous fluid was removed by a trochar. A superior and inferior flap was made and the sac dissected out. On opening, it was found to contain a strip of brain tissue about 2 inches in length, which protruded through a small aperture about  $\frac{1}{2}$  inch in diameter near the external occipital protuberance. Part of this brain tissue was reduced into the cranium, and the sac, together with the adherent brain tissue, removed. The child was discharged from hospital thirteen days later apparently perfectly well.

The sac was formed of three membranes, easily detachable but fused together at the ring, the outer being formed of connective

tissue, the middle of large blood vessels, and the inner of amorphous tissue. The piece of brain removed was part of the right lobe of the cerebellum. It was found on microscopic examination that the molecular layer was internal to the granular layer, the white matter outside of both, and the whole surrounded by dense vascular tissue. The cerebellar lobules had thus been everted, apparently as the result of a splitting of the central limb of the white matter and eversion of the two parts of the cortex.

The external membrane was considered to be an extension outside of the cranial cavity of the dura, arachnoid, and pia mater all fused together. The middle membrane comes from the interior of the cerebellum, probably from the tela choroidea inferior of the fourth ventricle, and the inner membrane possibly is a derivative of the ependymal cells.

The author thinks a pathological hypertrophy of the choroid plexus, by expanding the cerebellar cortex and pushing it through an accidental opening in the skull, may overcome the resistance of the cerebellum, protrude through it, and form one of the layers of the sac. The alterations of the circulation in this middle membrane is the cause of the exudation of the great quantity of fluid found in the sac, while the cerebellar tissue becomes everted and adherent to the walls of the sac.

A. NINIAN BRUCE.

**OBSERVATIONS ON CEREBRAL SURGERY.** JAMES H. KENYON, (132) *Annals of Surgery*, 1915, lxi., Jan., p. 17 (17 figs.).

THIS article is a brief account of the author's personal experience in cerebral surgery during the last fourteen years, and has for its basis the technic developed by the late Dr Frank Hartley and himself. Only the operative technic is described, and is based on about 160 cases. The importance of early diagnosis and operation is emphasised. The most satisfactory method of opening the skull is the osteoplastic flap. It gives the greatest possible exposure without increasing the duration or dangers of the operation. It enables the surgeon to combine in one operation exploration, radical treatment of the lesion, and also all the benefits of a decompression, if that be indicated. It provides by its accurate fit a restoration of the protecting cranium. The principle of cutting the skull from without inward is perfectly safe and quick under all conditions. The cutters best adapted are the burr drill and the Doyen circular saw protected with washers. The power to operate these cutters is best obtained by using a small electric motor, light enough to be held by the operator, and so constructed that the casing and wire may be removed for sterilising. Continuous suction applied through a tube of appropriate size and shape furnishes a good retractor for

the soft, friable tumour mass. Continuous suction applied through a suitable tube, preferably a small malleable metal tube which can be easily bent, is a most valuable adjunct to sponging and aids in furnishing a clear operative field, free from blood and cerebrospinal fluid. This is particularly useful in operations on the Gasserian ganglion and for lesions in the cerebello-pontine angle, where the small size of the tube in the wound does not interfere with the operator, although the wound is narrow and deep; good illumination is best obtained by using a cystoscopic lamp on a long flexible metal holder, all of which should be sterilised.

A. NINIAN BRUCE.

**CONTUSION OF THE BRAIN.** J. H. W. RHEIM, *Journ. Nerv. and Ment. Dis.*, 1914, xli., Oct.

THE author has recently examined a number of patients who had received head injuries, and in whom symptoms of so-called concussion have lasted several days; also one patient with localising symptoms who recovered, and one with localising symptoms who died. The subject has been studied from a microscopic standpoint, as well as, in part, clinically.

The chief points of interest in the cases described are as follows:—Extensive pial hæmorrhage may exist without any injury to the cortex or cortical cells. Contused areas showed fairly sharply defined infiltration of blood upon the adjoining cortical tissue. An inflammatory process was not found in the brain tissue. No evidence of a proliferative process was observed in that portion of the pia which was the seat of the hæmorrhage. Injury to the brain appeared in some places to be due to hæmorrhage extending from the pia. The cortical cells adjacent to the hæmorrhagic infiltration of the cortex did not appear to show any evidence of degeneration. D. K. HENDERSON.

**ENCEPHALITIS DUE TO THE INHALATION OF GASOLINE.**

(134) G. S. POTTS, *Journ. Nerv. and Ment. Dis.*, 1915, xlii., Jan.

TRANSITORY toxic symptoms, such as headache, nausea, delirium, and loss of consciousness, due to the inhalation of the fumes of gasoline, are not uncommon, but more permanent symptoms referable to the nervous system are relatively rare. Gasoline as sold contains a number of the different products of petrol distillation, such as naphtha, benzine, and petroleum ether.

The case is reported of a white male, aged 45 years, who was admitted to the hospital in an unconscious condition. His occupation had been that of filling the tanks of automobiles with gasoline, and while at work he had fallen over unconscious. Ten days after

admission he was still quite stupid, but could be aroused. He had then a ptosis of the right eyelid, and the eyeball was drawn downward and to the right. The following day it was noticed that he had a complete oculomotor palsy on the right side. On the left side the pupil responded to light, all movements of the eyeball were lost excepting inward rotation, and slight rotation outward. Associated movement of both eyes to the right was present. The angle of mouth could not be drawn so well to the left as to the right, and the left arm and leg were much weaker than those on the right side. The knee jerk was more exaggerated on the left side, ankle clonus was present on the left side, and there was a tendency to dorsal flexion of the toes on the left. There was ataxia and asynergia of the left arm and left leg. The gait was of the cerebellar type, with a tendency to fall to the left. In the course of four months a gradual improvement took place, and when last seen the only symptoms remaining were impairment of the functions of the left oculomotor nerve, ataxia of the left arm, and possibly slight weakness of the left leg.

It was thought that a lesion in the region of the aqueduct of Sylvius would explain the symptoms. D. K. HENDERSON.

**A CASE OF HÆMORRHAGIC ENCEPHALITIS CAUSED BY (135) NEOSALVARSAN.** (Fall von hæmorrhagischer Encephalitis hervorgerufen durch Neosalvarsan.) RASCH, *Derm. Zeitschr.*, 1914, **xxi.**, p. 787.

A WOMAN, aged 20, suffering from secondary syphilis, received an intravenous injection of 60 cgm. neosalvarsan, and a week later another injection of 75 cgm.; three days later vomiting, restlessness, and delirium occurred, and death took place nine days after the last injection. The necropsy showed the typical picture of salvarsan or neosalvarsan poisoning which is characterised by small hæmorrhages in the brain and marked congestion of all the organs.

Rasch attributes the encephalitis to the patient being an imbecile, the brain thus acting as a *locus minoris resistentiæ*.

J. D. ROLLESTON.

**NEW CONTRIBUTION TO THE SEMEIOLOGY OF TUMOURS OF (136) LOCALISED AREAS OF THE TEMPORAL LOBE.** (Nouvelle contribution à la séméiologie des tumeurs de zones déterminées du lobe temporal.) G. MINGAZZINI, *Rev. Neurol.*, 1914, **xxii.**, Juillet 15, p. 1 (3 figs.).

THE case is recorded of a man, aged 49, who developed frontal headache, incomplete lateral left hemianopsia, weakness of the left upper and lower limbs, slight paralysis of the left facial nerve, and

slight mental confusion. These symptoms came on slowly, and although they suggested a progressive lesion of the right side, it was difficult to localise it. They were followed later by a fresh set of symptoms, consisting of vomiting, vertigo, double optic neuritis, increased mental confusion, involvement of the right fifth, seventh, and twelfth nerves, weakness of the right corneal reflex, pain on percussing the head, paralysis of the left sixth nerve, left superior rectus and sphincter iridis, hypobaryesthesia, hypobahyesthesia, partial astereognosis, and slight ataxia of the cerebellar type, especially of the upper limbs. There were no involuntary movements. These suggested a tumour beginning in the right occipital region, spreading into the posterior half of the right temporal lobe, and pressing on the pons Varolii. At the operation a hard mass was found in this region, but was not removed. It was later found to be a sarcoma, and occupied all the occipital lobe and the whole of the posterior half of the right temporal lobe.

The differential diagnosis is discussed, and it is pointed out that tumours of the temporal lobe may be divided into four groups, according as they involve the anterior or the posterior regions of the outer or the lower surface respectively.

(1) *Tumours of the anterior two-thirds of the convex surface of the temporal lobe.*—These show marked general symptoms, with hemiparesis, more or less spastic, palpebral ptosis on the opposite side, and less frequently abducens paralysis, astereognosis of the opposite side, and, if the tumour be on the left side, some form of sensory aphasia or dysarthria.

(2) *Tumours of the posterior third of the convex surface* also cause marked general symptoms, with hemiparesis of the opposite side. All the oculomotor branches are involved, with sometimes bilateral nystagmus, tendency to conjugate deviation of the eyes, and cerebellar ataxia. A left-sided tumour always causes sensory aphasic symptoms.

(3) *Tumours of the posterior half of the inferior surface* may cause unilateral abducens paralysis, isolated facial paralysis, contralateral palpebral ptosis, hemiparesis, and hemianæsthesia. Sensory aphasic symptoms may be absent even in tumours of the left side.

(4) *Tumours of the anterior half of the inferior surface* may produce hallucinations of smell and taste, parageusia, or ageusia. The absence of olfactory hallucinations, however, does not mean that a lesion in this region can be excluded.

Symptoms may also be caused by pressure of such tumours on the mid-brain, pons Varolii, or cerebellum. A. NINIAN BRUCE.

**HEMIATROPHY OF THE CEREBELLUM IN A CASE OF LATE**

(137) **CATATONIA.** A. E. TAFT and M. E. MORSE, *Journ. Nerv. and Ment. Dis.*, 1914, xli., Sept., p. 553.

THE case here reported is one of atrophy of the right cerebellar hemisphere, restiform body, and the contralateral olive, probably of vascular origin, in a woman who presented the symptoms of late catatonia with symptoms possibly referable to the cerebellum (ataxia of arms). Anatomically the lesion belongs to the olivoponto-cerebellar type of secondary atrophy, and was probably caused in large measure by arterial thrombosis.

The effects of this lesion upon the neurone systems is described. D. K. HENDERSON.

**THE ASSOCIATION OF VARIOUS HYPERKINETIC SYMPTOMS**

(138) **WITH PARTIAL LESIONS OF THE OPTIC THALAMUS.**

E. E. SOUTHARD, *Journ. Nerv. and Ment. Dis.*, 1914, xli., Oct.

THE study was begun with the idea of learning something about the optic thalamus in its possible relation to mental symptoms. Former work on dementia præcox had suggested that certain parakinetic phenomena (catatonic states, &c.) might possibly be related more with the sensory areas of the cerebral cortex than with the motor. A natural step was to inquire whether lesions of subcortical structures might not occasionally produce such symptoms.

A study of the symptomatology of a group of twenty-five cases of chronic diffuse optic thalamus lesion has been made, and 96 per cent. have been observed to show one or more symptoms of the hyperkinetic group (exaltation, irritability, psychomotor excitement, homicidal tendencies, destructiveness), and but 40 per cent. to show depressive symptoms (including suicidal tendencies and apprehensiveness). To compare with these figures, the symptomatology of 261 cases having normal or normal-looking brains has been studied, and of these only 64 per cent. showed hyperkinetic symptoms and 52 per cent. showed depressive and allied symptoms. The one exception to the thalamic correlation with hyperkinesis is hardly a fair exception, being a stuporous general paralytic.

The author goes on to say that in evaluating these surprising results it must be remembered that coarse destructive lesions destroying through routes for sensory impulses have been omitted from consideration, and that additional cases of chronic diffuse lesions of the thalamus failed to yield hyperkinesis, apparently because of injury to the thalamo-cortical system above them.



The hyperkinetic symptoms are, on theoretical grounds, possibly due to withdrawal of cortico-thalamic "inhibitory" or "switch-setting" impulses, although another way in which the thalamic mechanism could be simplified is by atrophy or aplasia of certain cerebellar connections.

Such other statements as the following are made:—

"It is a little more likely that you shall find the habitual maniac to have lost some of his cells than that you shall find the habitual depressive a victim of cell loss, perhaps the habitual depressive will be found more a victim of cell clogging than of cell loss."

At another point: "Since one cannot clinically conclude a thinning of the thalamus in a case of mania, it is clear that the present communication is of general and genetic value rather than of immediate clinical value."

D. K. HENDERSON.

**PARAMYOCLONUS MULTIPLEX, INCLUDING A CASE WITH  
(139) NECROPSY SHOWING LYMPHOCYTIC INFILTRATION OF  
THE PIA.** E. M. WILLIAMS, *Journ. Nerv. and Ment. Dis.*, 1914,  
xli., July, p. 417.

IN addition to the necropsy findings, some of the clinical features were unusual, such as involvement of the face and tongue, the increase of the movements during voluntary efforts, and the peculiar affection of the speech.

The author feels that even the clearest cases should not be regarded as true clinical entities, but believes that the attacks should be considered as myoclonic, or myoclonoid manifestations of hysteria, epilepsy, or whatever the underlying disease might be. Frequently the resemblance to the tics and choreas is so close that the attacks might be forms of these affections.

The case specially referred to is that of a coloured man, aged 62 years, nearly every muscle of whose body showed coarse tremors or twitchings, and his voice was very tremulous and stuttering. His gait was slow, shuffling, and any attempt to turn quickly caused ataxia, and a marked coarse tremor of the legs and arms. Any voluntary movement of any part of the body provoked a coarse tremor. The tongue was possibly slightly atrophied on the left side, and a very violent coarse tremor was noted when it was protruded. There was no atrophy of the arms or legs, but on movement coarse tremors developed. There was no special reflex disturbance, and no disorder of the bladder and rectum. The patient eventually died from pneumonia.

The meninges of the brain were infiltrated with round cells extending into the cortex as an intense perivascular infiltration.

Plasma cells were present, but not numerous. The cells stained poorly, and many of the nuclei were absent, or not centrally placed. Neuronophagocytosis could be found in various stages. The glial cells were somewhat increased. A report is also given of sections from the pons, cervical, thoracic, and lumbar sections of the cord.

Short reports are given of seven other cases.

D. K. HENDERSON.

**OBSERVATIONS ON EPILEPSY, CHIEFLY FROM AN X-RAY  
(140) STANDPOINT.** T. M. M'KENNAN, GEORGE C. JOHNSTON, and  
C. H. HENNINGER, *Journ. Nerv. and Ment. Dis.*, 1914, xli., August.

IN 1913 one of the authors noted in epilepsy changes in the case of the skull, more especially in the region of the sella turcica. An overgrowth was noted of the anterior, but especially of the posterior clinoid processes; in some cases the fossa was largely or completely roofed over. A large proportion of the cases showed a distinctive increased density in the bony tissues forming the roof of the orbits, the sphenoidal sinus, and sphenoidal cells. In quite a number of cases the sphenoidal cells were decidedly blocked with newly-formed bony tissues.

Since the above report ninety-five cases have been studied. Seven of these cases were found to be pituitary tumours, and in only one of these was there any other evidence of involvement of the pituitary gland aside from the epileptic attacks. In these tumour cases, instead of local thickening there was local thinning of the body of the sphenoid or the clinoid processes from pressure.

In sixteen cases there was local thickening of bony tissue that was confined to the clinoid processes, or to thickening in the anterior fossa of the base of the skull.

In twenty-two cases the local bony change was found in two situations, namely the clinoid processes and the base of the anterior fossa.

In thirty-five cases there were bony changes in three situations, namely, the clinoid processes, the anterior fossa, and the body of the sphenoid bone.

In fifteen cases no bony alterations were found. Of these latter cases six gave clinical evidence of some form of cerebral disease, *e.g.*, general paralysis, internal hydrocephalus, &c.

In all cases the average age was 23 years. From an analysis of the cases it would seem that the attacks were more frequent in those cases in which the bony changes were most pronounced.

Age apparently did not signify anything as far as the bony changes were concerned, as one case, aged 5 years, exhibited all the features, whereas one case, aged 56 years, showed only one feature.

In examining an equal series of plates from cases in which there was no history of epilepsy, only 10 per cent. showed any alteration of the features mentioned, while 80 per cent. of the epileptics showed bony changes.

The authors feel that the bony overgrowth is a local acromegaly, and that the bony deposit is brought about through venous congestion at the base of the skull. It is thought probable that the venous hyperæmia may be due to some vasomotor disturbance of the anterior lobe of the pituitary gland, which prevents a proper amount of secretion of the posterior lobe from gaining access to the third ventricle by way of the infundibulum, and therefore in all probability repeated hyperæmias would cause a crippling of the whole pituitary gland. In consequence of the above, hypopituitarism would result, and as it is known that epilepsy accompanies that condition, it would appear that so-called idiopathic epilepsy is due to a mechanical injury of the pituitary gland.

D. K. HENDERSON.

**A CASE OF PURE PSYCHIC EPILEPSY.** E. STANLEY ABBOT, *Journ. (141) Nerv. and Ment. Dis.*, 1914, xli., July, p. 426.

A MAN, aged 38 years, whose mother was "hysterical" and whose sister has had "nervous prostration." Since the age of 25 years he has had several attacks characterised by the sudden onset of a condition in which there have been, in one or more automatic and somnambulistic acts a fugue narrowing of the intellectual field, general diffuse dulling of the psychic and sensory activities, even to stupor, complete disorientation, vivid auditory and visual hallucinations, delirious ideas different in the different attacks, a tendency to perseveration and to stereotyped repetition of words or acts, flighty associations, hilarity, depression, psycho-motor retardation, muscular weakness, and fumbling movements, but no localised anæsthesias or paralyses.

These attacks have usually been preceded for a few hours or a day or two by an unmotivated depression, a thinking difficulty with feeling of confusion, and especially by an occipital headache growing more intense. Following the attacks there has been a period of amnesia varying in duration and intensity.

The patient has not shown any mental deterioration.

D. K. HENDERSON.

**EPILEPTOID ATTACKS IN DEGENERATES.** (*Les attaques épileptoïdes des dégénérés.*) G. HALBERSTADT, *Rev. Neurol.*, 1914, xxii., Fév. 15, p. 175.

THE author draws attention here to attacks which resemble epileptic attacks, but which can neither be classified as epileptic nor hysterical. They are met with in degenerates and neuropaths, and may sometimes be very difficult to distinguish from true epilepsy. They are, however, always provoked by certain definite circumstances, and are not spontaneous. They are uninfluenced by bromides, but dietetic, hydrotherapeutic or psychoanalytic treatment may prove successful. Between the attacks the mental state of the patient is not like that of epileptics, and numerous signs of degeneracy are present, such as phobias, tics, obsessions, perversions, &c. The mental characteristics of hysterical patients is also not found in these cases.

The following different clinical forms may be included under this heading: (1) psychasthenic epilepsy; (2) epilepsy *provoquée* in young degenerates, or "Affektepilepsie," and (3) narcolepsie, first isolated by Friedmann as a clinical entity. These are described and discussed.

A. NINIAN BRUCE.

**CHRONIC INTERMITTENT CHOREA WITHOUT MENTAL**  
(143) **TROUBLE OF POST-PUERPERAL ORIGIN.** (*Chorée chronique intermittente sans troubles mentaux, d'origine post-puerpérale.*) J. LHERMITTE and CORNIL, *Rev. Neurol.*, 1914, xxii., Juillet 30, p. 7.

A WOMAN, aged 46, developed choreiform movements of all four limbs and of the head six weeks after parturition. She was then aged 23, had always been in good health, and had no hereditary or familial history. The movements diminished greatly during a second pregnancy the following year, but returned after parturition. The child died after nine months from meningitis. The third pregnancy occurred two years later, and was again accompanied by diminution in the intensity of the choreiform movements, which, after parturition, recurred as severely as before. This child also died from meningitis, aged 2½ years. For the next five years no improvement took place, until suddenly, at the age of 31, they ceased altogether. This cessation lasted six years, when she was deserted by her husband, leaving her a son to educate and an old father to provide for. The movements returned, and since then have not even improved.

Obviously this case cannot be classified as one of Huntington's chorea. It was not progressive, there were no mental symptoms, and it was accompanied by remissions and oscillations. Chronic

intermittent chorea must be regarded as a separate clinical entity. A positive Babinski sign was found on the right side, not on the left.

A. NINIAN BRUCE.

**A COMPARISON OF THE LESIONS OF SYPHILIS AND "PARA-SYPHILIS," TOGETHER WITH EVIDENCE IN FAVOUR OF THE IDENTITY OF THESE TWO CONDITIONS.** JAMES M'INTOSH and PAUL FILDES, *Brain*, 1914, xxxvii., Sept., p. 141.

1. THE interstitial lesions of syphilis should not be looked upon as "characteristic" of syphilis to the exclusion of the parenchymatous. In addition to the interstitial reactions in the skin and internal organs, the essential parenchyma of these organs is also primarily involved in the intoxication. As a result of the stimulation by the virus the interstitial tissues will undergo a proliferation, but this will be absent or abortive in the case of the parenchyma. This tissue will usually degenerate, being incapable of extensive repair, and the secondary degeneration will entail a loss of function which will be unaffected by anti-syphilitic treatment. The above result is the effect of a diffuse dissemination of the virus, but if the spirochaetes appear in a series of foci, the whole process will tend to take on a focal arrangement, and in this case the nodular interstitial reaction will tend to overshadow the local parenchymatous reaction.

2. The fact that relatively little cell reaction is produced by a large number of spirochaetes in acute syphilis, and an extensive reaction by a small quantity of virus in chronic syphilis, is due to an alteration in the susceptibility of the tissues to the virus. The alteration corresponds to that described by von Pirquet as "allergie." The phenomena following experimental syphilization, the result of cutaneous reactions and the manifestations of syphilis itself, are all explicable on the grounds of allergie. The type of allergie, hypersusceptibility, present in tertiary syphilis is developed as an immunity response to an intoxication of the tissues occurring in the acute stage of syphilis, and the actual occurrence of the lesion is due to an exacerbation of spirochaetes which have remained dormant as a "rest" from the general dissemination in the acute stage. Although an immunity response, the state of hypersusceptibility leaves the tissues abnormally susceptible to the toxic action of the virus, and thus the tertiary lesion is characterised by an excessive liability to degeneration. The most important sequelæ of these degenerations are to be found in the various organs. If the interstitial tissues are the site of the lesion, the type of reaction and degeneration known as a gumma will result. This reaction is not vital and is capable of undergoing repair. If the parenchyma is involved the abortive reaction will

lead to a progressive degeneration, progressive because these tissues are capable of little repair. This degeneration will lead to the functional destruction of the organ, and such a result may be occasioned even by a small quantity of virus.

3. The central nervous system is affected by syphilis at the same periods and in the same manner as are other internal organs. In addition, the "parasyphilitic" lesions are also of a tertiary syphilitic nature, being directly comparable to the parenchymatous affections found elsewhere in the body. They are "tertiary" lesions differing only from the so-called "gummatous" processes in the central nervous system in that their localisation is in the parenchyma, while that of the latter is in the interstitial tissues.

4. The "parasyphilitic" diseases are due to an exacerbation of *Spirochaeta pallida* about nerve elements which are in a state of hypersusceptibility. This state is induced as a reaction to an intoxication occurring in the secondary period, and the spirochaetes taking part in the exacerbation are remnants of those which produced the original intoxication. The path of invasion of the central nervous system may be twofold. Firstly, the spirochaetes may reach the nerve elements by the blood stream as part of the general dissemination of the secondary period, or secondly, they may reach these structures during the same period by direct spread up the perineural lymphatics. The interstitial nervous lesions of tertiary syphilis are due to a similar process affecting these tissues only.

5. The progressive character of "parasyphilitic" lesions is due to a continuation of the syphilitic process in spite of treatment, and not to a progressive primary degeneration of the neurons. The degeneration passively extends to the limits of the neuron, but does not actively spread to other neurons. Treatment is ineffective in resolving the inflammation, because drugs in the blood stream are unable to pass from the capillaries into the nervous substance in order to destroy the spirochaetes. If by some method salvarsan succeeds in penetrating into the brain or cord, it produces such toxic symptoms as make its use impossible.

A. NINIAN BRUCE.

**ON A CASE OF RAPIDLY FATAL SYPHILITIC MENINGITIS**  
(145) **NINE WEEKS AFTER THE PRIMARY LESION.** (Über einen Fall von rasch tödlich verlaufener Meningitis luica neun Wochen nach dem Primäraffekt.) T. FAHR, *Dermat. Wochenschr.*, 1914, lix., p. 1103.

A MAN, aged 25, who had contracted syphilis nine weeks previously, and had had a maculo-papular eruption for a fortnight, though otherwise in apparently good health, suddenly lost consciousness

and died without any signs of paralysis in twelve hours. In addition to œdema of the lungs, enlargement of the peripheral lymph glands, perihepatitis and splenitis, an infarct in the spleen, and congestion of the organs, the autopsy showed syphilitic meningitis of the convexity localised in the anterior portion of the left frontal lobe. The basal meninges were unaffected. Numerous spirochætes were found in the infiltrations, round and in the walls of the vessels, and also free in the lumina of the vessels.

J. D. ROLLESTON.

**ON NERVOUS SYMPTOMS IN EARLY SYPHILIS.** (Über nerven-  
(146) symptome bei frischer Syphilis.) O. LEOPOLD, *Arch. f. Derm. u. Syph.*, 1914, cxx., p. 101.

LEOPOLD reviews the literature, and records his own observations at the All Saints' Hospital in Breslau. In addition to the pathological condition of the cerebro-spinal fluid recorded by previous writers, he found more or less deviation from the normal in the peripheral nervous system, manifested chiefly by exaggeration of the tendon and skin reflexes, inequality of the reflexes on the two sides, in a few cases in absence of the reflexes, in positive Babinski, Oppenheim, and Romberg signs, inequality and abnormal reaction of the pupils, and sensory disturbances. This involvement of the nervous system was chiefly found where the general infection and other symptoms of syphilis were well marked. The writer gives, in tabular form, the nervous symptoms shown by sixty-four patients in the primary and secondary stages of syphilis.

J. D. ROLLESTON.

**PARALYSIS AGITANS SYNDROME WITH SYPHILIS OF THE**  
(147) **NERVOUS SYSTEM.** CARL D. CAMP, *Journ. Nerv. and Ment. Dis.*, 1914, xli., August.

THE author has reviewed those cases which have been reported in the literature as combinations of Parkinson's disease and tabes dorsalis. He feels that some of these cases are simply cases of cerebro-spinal syphilis or tabes dorsalis in which there has occurred a tremor like that of paralysis agitans.

He reports a case in which the typical symptoms of Parkinson's disease were present, but which clinical examination, as well as study of the blood and spinal fluid, showed to be a case of tabes.

The case was treated with three intravenous injections of neosalvarsan, and a marked lessening of the tremor is said to have taken place. The blood and cerebro-spinal fluid findings have not been modified.

It is unfortunate that no note is made of the mental condition of the patient.

D. K. HENDERSON.

**OBSERVATION UPON SPINAL FLUID CELL COUNTS IN UN-**  
(148) **TREATED CASES OF CEREBRO-SPINAL SYPHILIS.** H. W. MITCHELL, IRA A. DARLING, and P. B. NEWCOMB, *Journ. Nerv. and Ment. Dis.*, 1914, xli., Nov., p. 686.

SINCE the cell count has been used by some as an index of the value of treatment by salvarsan therapy, it was thought advisable to make some comparative counts at regular intervals upon untreated cases of paresis, so as to ascertain the extent of fluctuation. Some 300 counts were made upon thirty-four patients at intervals of two weeks. In all but two cases, both far advanced paretics, a cell count of three or less was found at some time.

Some of the conclusions are:—

1. Great variation in the cell count may be found at short intervals in any stage of the disease.
2. Both high and low average counts persist for months at a time in various stages of the disease.
3. A low or falling count is common, but not universal, before death.
4. A reduction in the cell count to the normal limit frequently occurs in progressive untreated cases at any time during the course of the disease.
5. The reduced cell count, accompanied with persistence of a positive Wassermann reaction in the fluid, cannot be regarded as having valuable prognostic significance.

D. K. HENDERSON.

**THE AMINO-ACID CONTENT OF THE BLOOD AND SPINAL**  
(149) **FLUID OF SYPHILITIC AND NON-SYPHILITIC INDIVIDUALS.** A. W. M. ELLIS, G. E. CULLEN, and D. D. VAN SLYKE, *Journ. Amer. Med. Assoc.*, 1915, lxiv., Jan. 9, p. 126.

THE amino-acid nitrogen of the blood varies within certain definite limits (4.5 to 8.5 mg. per 100 c.c.) in different individuals. A similar variation occurs in the same individual at different times. The amino-acid nitrogen content of the blood in syphilitics varies within exactly the same limits as in the blood of non-syphilitics. The amino-acid nitrogen content of neither the blood nor spinal fluid of a syphilitic bears any relation to the Wassermann reaction. The authors thus do not agree with the opinion of Kaplan, and of Kaplan and M'Clelland, that in patients with syphilis the amino-acid nitrogen of the blood is diminished, and that such determinations may be used as a means of diagnosis.

A. NINIAN BRUCE.



**A COMPARISON OF THE WASSERMANN REACTION AMONG THE**

(150) **ACUTE AND THE CHRONIC INSANE.** IRA A. DARLING and P. B. NEWCOMB, *Journ. Nerv. and Ment. Dis.*, 1914, xli., Sept., p. 575.

OWING to the great importance of the Wassermann reaction, the authors have examined the blood serum of 849 patients, who were still in residence, and had been admitted to the Warren State Hospital prior to September 1912. Forty-three, or 5.06 per cent., of these cases had a positive reaction.

In the seventeen months elapsing since September 1912, 452 Wassermann reactions were done, of which 92, or 20.4 per cent., were positive. The above discrepancy is due to the fact that cases of general paralysis and cerebro-spinal lues are usually well advanced when committed to an institution for the insane, and consequently their hospital residence is brief.

D. K. HENDERSON.

**HERPES ZOSTER AND GANGRENOUS HERPES ZOSTER AFTER**

(151) **SALVARSAN.** (*Herpes Zoster und Herpes Zoster gangraenosus nach Salvarsan.*) A. OETTINGER, *Derm. Zeitschr.*, 1914, xxi., p. 780.

OETTINGER alludes to the cases reported by Bettmann (*v. Review*, 1911, ix., p. 199), Meyer (*ibid.*, p. 260) and others, and records a personal case in a woman, aged 51, who developed gangrenous herpes zoster of V<sup>1</sup> after intravenous injection of 0.4 salvarsan.

J. D. ROLLESTON.

**THE USE OF INJECTIONS OF SALVARSANISED SERUM IN**

(152) **VITRO AND IN VIVO UNDER THE SPINAL AND CEREBRAL ARACHNOID IN TABES AND IN GENERAL PARALYSIS.** (*L'emploi des injections de sérum salvarsanisé in vitro et in vivo sous l'arachnoïde spinale et cérébrale dans le tabes et la paralysie générale.*) G. MARINESCO and J. MINEA, *Rev. Neurol.*, 1914, xxii., Mars 15, p. 337.

In 1911 Marinesco used the serum of syphilitic subjects treated by salvarsan for intraspinal injection in syphilis of the spinal cord. The results were good. In 1913 Robertson and Swift and Ellis used the same method with favourable results. Other authors, including Wechselmann and Marinesco, have preferred the direct injection of neosalvarsan, and have also reported good results. In the present paper an account is given of the treatment of nineteen cases of syphilis of the nervous system by the intraspinal injection of neosalvarsan dissolved in the serum of the same patient. Fifteen were cases of tabes. A bad result was only noticed in one case, which developed permanent retention of

urine, and died twenty-three days later. Some showed a definite improvement. In two cases of general paralysis, 20 cgs. of neosalvarsan dissolved in 2 c.c. of serum was injected into the subarachnoid space over the middle of the left frontal region. Both cases developed epileptiform attacks several hours after the injection. In one case very slight improvement took place. In thirteen other cases bilateral injection of 10 mg. of neosalvarsan dissolved in 4 g. of inactivated serum on each side resulted in slight improvement in four cases.

A. NINIAN BRUCE.

**THREE CASES OF TETANUS CURED BY SUBCUTANEOUS  
(153) INJECTIONS OF ANTI-TETANIC SERUM.** J. COMBY, *Brit. Journ. Child. Dis.*, 1915, xii., p. 1.

A REVIEW of the literature and a record of three personal cases in boys aged 11, 12, and 13 years old. In each case the incubation period was very long, viz., eighteen, nineteen, and twenty days respectively.

Comby concludes that with a long incubation period the prognosis is good, and almost always fatal when the incubation period is short.

J. D. ROLLESTON.

**BASEDOWISM OR VASOMOTOR NEUROSIS. VASOMOTOR  
(154) DISTURBANCE, WITH EXCITABLE HEART, NERVOUS  
DYSPEPSIA, TREMOR, AND PSYCHIC TROUBLES.**  
(Basedowisme ou névrose vaso-motrice. Troubles vaso-moteurs avec cœur instable et facilement excitable, dyspepsie nerveuse, tremblement, troubles psychiques.) L. ALQUIER, *Rev. Neurol.*, 1914, xxii., Mars 30, p. 393.

TEN cases are here described, four being in men, in all of which the symptoms were of the above nature. Marked enlargement of the thyroid was not present in any. The special features were the irregularity in the grouping of the different symptoms and their variable character. The mental symptoms presented by the patients were agitation, confusion, extreme irritability, anxiety, and emotional instability. They are each discussed at length, and four more somewhat similar cases of tachycardia recorded, three in tuberculosis and one in diabetes.

The condition is a neurosis of the vegetative nervous system, and its relation to Basedow's disease is considered.

A. NINIAN BRUCE.

## PSYCHIATRY.

- CONTRIBUTION TO THE STUDY OF THE CAUSE OF SUDDEN**  
(155) **DEATH IN DEMENTIA PRÆCOX.** (Contributo allo studio delle cause di morte improvvisa nella demenza precoce.)  
VINCENTO SCARPINI, *Rassegna di Studi. Psichiat.*, 1915, v., Gennaio-Febbraio, p. 3.

THE author describes the presence of capillary hæmorrhages in the dorsal nucleus of the right vagus in two cases of dementia præcox in which sudden death occurred. There were also present diffuse lesions in the cerebral cortex, with numerous amœboid cells and degenerative products. The author, although admitting that the bulb lesions were very limited, discusses the influence they may have had in producing sudden death, especially when associated with cortical lesions, and considers that very probably there was an increased vagotonus in both cases.

A. NINIAN BRUCE.

- A NOTE ON THE RELATIVE WEIGHT OF THE LIVER AND**  
(156) **BRAIN IN PSYCHOSES.** A. MYERSON, *Journ. Nerv. and Ment Dis.*, 1914, xli., July, p. 441.

THIS is the first of a series of papers concerning the condition of the organs in the psychoses. Since a relation of brain changes to many of the psychoses has not as yet been determined, there is some ground for expecting that light on the pathology may come from a systematic study of the organs.

This paper concerns itself entirely with the weight of the liver, as compared with the weight of the brain, in persons dying in Taunton State Hospital.

In active, healthy life the liver is heavier than the brain in the ratio of 16-13.

In the progress of life this ratio becomes changed under normal conditions; at the age of forty or thereabouts the brain reaches its maximum weight, and from then on there is a slow, steady decline. The liver weight remains stationary from thirty to forty, and then undergoes a more rapid decline than does the brain, so that at seventy to seventy-five it weighs less than the brain in normal old people. As it is well known that emaciation markedly reduces the weight of the liver, for this preliminary study the cases have been placed under two headings, Emaciation and Non-Emaciation.

SERIES I.—(a) Emaciated Senile Dementia Cases.

The total number of cases was twenty-five, most of whom were women. The average weight of the liver was 940 g.; average brain weight, 1,070 g.

**(b) Non-Emaciated Senile Dementia Cases.**

Twenty-five cases were studied in this group, a little over half of whom were males; weight of liver averaged 1,270 g., average weight of brain, 1,270 g. If, then, brain changes are measured by the weight changes, they are much less marked in senile dementia cases than are the liver changes.

Cases of dementia præcox, general paralysis, and epilepsy are also considered.

D. K. HENDERSON.

**STUDY OF THE ACTION OF THE SERUM OF MANIACS IN  
(157) MELANCHOLIA, AND OF THE SERUM OF MELANCHOLIA  
IN MANIA.** (*Essais sur l'action du sérum des maniaques dans  
la mélancolie et du sérum des mélancoliques dans la manie.*)

G. PARHON, Mlle. EUG. MATÈSCO, and A. TUPA, *Rev. Neurol.*, 1913, xxi., Avril 15, p. 450.

A MAN, aged 45, suffering from melancholia, was given six injections, both intravenous and subcutaneous, of from 10 to 34 c.c. of serum taken from different cases of mania. A sudden improvement in his psychical condition followed the second injection, but the subsequent injections produced no further effect. The psychical state of the three female patients who furnished the serum is given, one of whom appears to have suffered from pellagra.

Injections of serum from two cases of simple melancholia into a case of manic-depressive psychosis during a period of excitement, resulted in no particular change.

A. NINIAN BRUCE.

**ON THE DIAGNOSTIC VALUE OF HALLUCINATIONS, BASED  
(158) ON A STUDY OF FIVE HUNDRED CASES OF MENTAL  
DISEASE.** A. W. STEARNS, *Journ. Nerv. and Ment. Dis.*, 1915, xlii., Jan.

THIS study has been undertaken with the hope that the occurrence and type of hallucinations might be made of some differential value in diagnosis.

The group of cases was taken in alphabetical order to see, first, how many had hallucinations; next, whether they were of hearing, vision, or other type; and lastly, to determine whether there were any which seemed especially characteristic of any form of disease.

The following conclusions are arrived at:—

1. The presence of hallucinations is indispensable for the diagnosis of alcoholic hallucinosis or delirium tremens, but the type of hallucinations is not a proper criterion for differentiation between these diseases.

2. The frequency of hallucinations in dementia præcox, and their rarity in manic-depressive insanity, have a bearing on differential diagnosis.

3. There are some grounds for doubting the existence of true hallucinations in manic-depressive insanity.

4. Hallucinations seem to be rare in some persons, even though they be psychopaths.

D. K. HENDERSON.

## Reviews

### **AN ANATOMICAL GUIDE TO EXPERIMENTAL RESEARCHES**

(159) **ON THE CAT'S BRAIN.** A series of thirty-five frontal sections.

Dr C. WINKLER and Dr ADA POTTER. Pp. 133. 1914. W. Versluys, Amsterdam.

IN this admirable atlas we have reproduced a series of plates representing thirty-five frontal sections through the brain of the cat. Drawings have been preferred to photographs, and each is accompanied not only by a complete detailed description, but also in many places by additional figures illustrating special points, such as the structure of different parts of the cerebral cortex and different regions of the thalamus. The first plate consists of four photographs of the brain surface from the mesial, lateral, ventral, and dorsal aspects, with the different fissures, convolutions, and parts all carefully named. There then follow two diagrams (mesial and lateral surfaces) showing the regions through which the thirty-five different sections have passed, and then the sections themselves are given. The plates have been beautifully reproduced, and show what very great care has been used in the preparation and staining of the sections. The atlas concludes with an index from which any tract or area may be immediately traced.

The publication of such an elaborate and expensive work has been made possible by the munificence of the late Mr R. A. Laan of Wormerveer, who left a considerable sum of money for the establishment of an institute for brain research. The building of this laboratory having been delayed, it was decided to use part of the interest in publishing this atlas. 500 copies have been prepared, and the authors are able to present these free of charge to all neurological laboratories or investigators in any country.

The cat, being so frequently used for experimental neurological

research, is an animal particularly suitable for such an investigation, and we have to congratulate the authors on the completion of such a laborious piece of work, which has been so successfully carried out.

**LES TECHNIQUES ANATOMO-PATHOLOGIQUES DU SYSTÈME (160) NERVEUX. ANATOMIE MACROSCOPIQUE ET HISTOLOGIQUE.** GUSTAVE ROUSSY and JEAN LHERMITTE. Préface de M. PIERRE MARIE. Pp. 255. Masson et Cie, Paris, 1914. Pr. 5 fr.

THIS is an invaluable little book upon the technique required for histological examination of the central nervous system. In no other tissue system has such an elaborate technique developed, and so many different fixing and staining methods, together with their numerous modifications, have now been introduced that it is difficult for anyone who has not an extensive histological experience to know which method is most suitable for the particular object he has in view. All these different methods are described here in a clear and simple manner, all unnecessary details being avoided. The authors have personally used all the methods here described, and point out the advantages and disadvantages of each.

The book opens with a most useful chapter upon fixation *in situ* with formalin, followed by a description of the different ways in which the brain should be cut up and the way these different pieces should be arranged for serial or non-serial sections. The next chapter deals with the various fixing reagents, and points out the special indication for each. There then follow chapters upon section cutting by the freezing, celloidin, and paraffin methods. The different staining reactions are described under the heading of the part of the nervous system in connection with which they are specially used, and thus we have chapters upon the nerve cell, the myelin sheath (normal and degenerated), the neuroglia, the vascular connective tissue elements, the elements of cellular differentiation (*c.g.*, lipoid granules, pigment, &c.), the peripheral nerves, the striate muscle fibres, and lastly, a short chapter upon the staining of different micro-organisms, the spirochæte, Negri bodies, and trypanosomes. There is a good index.

The authors mention in their introduction that they do not wish the book to be regarded as "a book for the library, its place is on the laboratory table beside the fixing and staining reagents." It is, in fact, exactly what is required for this purpose, and may be safely recommended to anyone wishing a book from which they may learn everything which is required for ordinary nervous histological work from the time of the removal of the tissue to its final position under the microscope ready for examination.

**A CLINICAL STUDY OF THE SEROUS AND PURULENT (161) DISEASES OF THE LABYRINTH.** Dr ERICH RUTTIN. With a foreword by Prof. Dr VICTOR URBANTSCHITSCH. Authorised translation by HORACE NEWHART. Pp. viii+232, with 25 textual figures. William Heinemann, London, 1914.

DR NEWHART has done good service in translating this book into English, as it is undoubtedly the best book which has yet appeared upon this subject. It is founded upon a study of 108 cases, the histories of which occupy more than half the book.

The first chapter deals with the examination of the vestibular apparatus, which "reacts to the movement of its lymph by a reflex movement of the eyes which we call nystagmus." "Nystagmus is a rhythmic, associated movement of both eyeballs; rhythmic, because it consists of two regular components, following each other in sequence, the one quick, the other slow; associated, because both eyeballs regularly participate in the movement." Bárány has demonstrated that the slow component is the vestibular, while the quick component is the opposing movement of central origin. The question of nystagmus is discussed at considerable length under the headings of direction, degree, production by (a) rotation or turning stimulus, (b) caloric stimulus, and (c) mechanical stimulus (fistula test), relative value of the stimuli and disturbances of equilibrium.

The second chapter deals with inflammations of the labyrinth occurring after chronic middle ear suppurations. These are divided into three groups, (1) circumscribed labyrinthitis, (2) diffuse serous secondary labyrinthitis, and (3) diffuse purulent labyrinthitis. These, although grades of one and the same process, are best considered for the purposes of diagnosis and treatment as separate clinical entities. Each may be manifest or latent, depending on the presence or absence of symptoms which are designated "labyrinth symptoms." These consist of diminution of hearing and tinnitus on the part of the cochlear apparatus, and nystagmus, vertigo, vomiting and disturbances of equilibrium on the part of the vestibular apparatus. The discussion of these three groups is extremely good, the indications for operation and operative technique being easily followed. A chapter is devoted to injuries to the labyrinth and another to "serous induced labyrinthitis" which results from inflammation spreading directly through the labyrinth wall, of which eleven cases are recorded. The last chapter deals with labyrinthitis and brain abscess. The author had eight such cases, four being temporal lobe abscesses and four cerebellar, with in addition two cured cases of the latter. This latter condition is particularly difficult to diagnose, the symptoms in both being so entirely similar that the differential diagnosis may be quite impossible.

The diagnosis and treatment of labyrinthine disease concerns the specialist more than the general practitioner, but the clearness with which the functional manifestations of the normal and diseased labyrinth are here presented together with the different clinical aspects and therapeutic considerations of each case make the book well worthy of careful study even by those who have not made a special study of the labyrinth and its diseases.

**TREATMENT OF NEURASTHENIA.** P. HARTENBERG, translated by (162) ERNEST PLAYFAIR. Pp. viii+283. Oxford Medical Publications, 1914. Pr. 6s. net.

IN the first paragraph of this book, the author finds himself confronted with the problem of defining "neurasthenia." He points out that the term "neurasthenic" is often confused with "neuropath," which is quite a different condition. After devoting fifty-two pages to describing the condition, he gives the definition that neurasthenia is "a state of simple depression of the nervous system." Overwork alone is incapable of causing it, the underlying factor is the emotional state. The dominant sensation in melancholia is moral pain, which is absent in neurasthenia. When neurasthenia is accompanied by dyspepsia, it is the dyspepsia which is the primary factor. It may be either an autonomous disease with features entirely its own, or only a syndrome of accidental, fortuitous occurrence. The book is based upon fifteen years' experience of nervous disease, and gives a very workable description of neurasthenia. There is an interesting chapter describing the methods which the author has used in studying and examining his cases. The question of treatment is discussed under the headings of (1) predisposition, (2) exciting cause, (3) fundamental asthenia, (4) mental state, (5) other symptoms, and (6) complications. The question of psychotherapy is dismissed with very few words, and psychoanalysis is scarcely referred to. Instead, the author attributes the condition to many different causes, the only and true specific cause being the nervous predisposition of the patient. Treatment must be carried out along three directions, (1) "to combat all the predisposing or exciting causes which brought about the state of depression; debility, arthritism, digestive disorders, infections, intoxications, moral conditions, &c.; (2) it must deal with the primary depression by means of rest and tonics, and with the mental state by means of psychotherapy; (3) it must combat more particularly the obstinate and prominent symptoms, such as headache, migraine, vertigo, &c., as well as the secondary complications." As a rule "isolation is most frequently only a disguised avowal of incapacity



or indifference. On the contrary, every effort should be made to treat the patient in his surroundings," especially as "the surroundings which have engendered the neurosis are those to which he will some day be compelled to return."

A large number of valuable hints may be obtained from this book, which is more of the nature of a general description of the nature and treatment of the condition rather than an attempt to explain everything along any one particular line of investigation.

**AMBIDEXTERITY AND MENTAL CULTURE.** H. MACNAUGHTON-(163) JONES. Pp. 102 (17 plates). 1914. William Heinemann, London. Pr. 2s. 6d. net.

THIS little book is an attempt to condense in abstract the conclusions that may be drawn from the authoritative opinions on this subject of a number of leading physiologists, psychologists, and teachers, and to bring new recruits to the cause of teaching ambidexterity in schools.

The argument is that owing to the development of right-handedness in man the left cerebral hemisphere has undergone greater specialisation, and this increase in the associative complexes has resulted in the predominant influence of this hemisphere on the highest intellectual processes, namely, speech and writing. Therefore "it is clear that early education of the two hands must have a bi-lateral effect in developing the functional powers of both these intellectual centres. Such development means greater facility of expression in language, greater retentiveness, more rapid conversion of thought into audible and invisible speech, quicker appreciation of impressions, as of size, form, weight, and colour, and the fixing of those on the tablets of memory for future use." And not only will this be the case for the individual. It "must have an important influence on the national character," and "in these days . . . the nation cannot afford to ignore any step that can be taken to improve the general and technical systems of education." As all this may result from ambidexterity, it is obvious that the claim is a large one. But although a number of interesting points are brought forward in support, and many important opinions quoted, the analysis is neither pursued at great length nor is it very convincing. That handicraft is a valuable part of any educational system is beyond dispute, as is also the fact that ambidexterity has many advantages, but that this may lead to an improved moral character is another question altogether, and it is still open to discussion whether better results may not be obtained by still higher specialisation of the right hand than by the method here indicated.

**HUMAN DERELICTS.** *Medico-Sociological Studies for Teachers of (164) Religion and Social Workers.* Edited by T. N. KELYNACK. Foreword by Sir THOMAS CLOUSTON. Pp. xxii + 341. Charles H. Kelly, London. Pr. 5s. net.

HUMAN "derelicts" differ from derelicts at sea in this respect that, while both are dangerous to other wayfarers, the latter are promptly destroyed, while the former are preserved. This necessitates great expense and labour, as there are over a million such derelicts in Great Britain alone. The aim of this book is to provide those engaged in trying to remove the causes producing such conditions, and helping those already in this class, with a reliable presentation, in non-technical language, of the principal facts likely to be of assistance to all those engaged in the study and solution of such social problems.

The book takes the form of seventeen different chapters, each under separate authorship and dealing with such subjects as mental derelicts, idiots and imbeciles, lunatics, the feeble-minded, the epileptic, the vagrant, and so on. Each chapter is followed by a short bibliography. The contributions are all good, but are so distinct from one another, that one does not carry away any general impression of the real nature of the cause at work producing such conditions, nor of the methods by which they can be controlled or ameliorated. The book is suitably described by the editor as a contribution to social pathology, and as such should prove of value to all interested in such problems. Its principal medical interest lies in the fact that it may be regarded as a contribution to preventive medicine, and as an indication of the extreme importance of attacking the causes at work which produce such conditions. These are overlooked by many of those who devote their energies to treating the results. The foreword by Sir Thomas Clouston sums up the whole situation briefly, and points out some of the leading difficulties in dealing with such complex social problems.

#### BOOKS AND PAMPHLETS RECEIVED.

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Fearnside, E. G. "Frost-bite" (*Brit. Journ. Dermatol.*, 1915, Feb.).

Graham, J. Edward. "The Mental Deficiency and Lunacy (Scot.) Act, 1913." William Hodge & Co., Edinburgh and Glasgow, 1914. Pr. 12s. 6d. net.

Meyer and Gottlieb. "Pharmacology, Clinical and Experimental." Authorised translation by J. T. Halsey. Pp. xii + 604, with 65 text illustrations, 7 in colour. J. B. Lippincott Co., Philadelphia and London. Pr. 25s. net.

Winkler, Dr C., and Potter, Dr Ada. "An Anatomical Guide to Experimental Researches on the Cat's Brain." A series of 35 frontal sections. W. Versluys, Amsterdam, 1914.

# Review or Neurology and Psychiatry

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## Original Articles

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### THE NEW PSYCHIATRY.

By W. H. B. STODDART, M.D., F.R.C.P.,

Lecturer on Mental Diseases at St Thomas's Hospital, London.

(The Morison Lectures delivered at the Royal College of Physicians,  
Edinburgh, in March 1915.)

#### LECTURE I.

##### *Fundamental Psychological Mechanisms.*

BEFORE entering on my theme I wish to express to you my most sincere gratitude for the honour you have conferred on me by inviting me to deliver these lectures. To have my name associated with those of such eminent men as have preceded me in this Chair is a dignity which I appreciate very highly, and it is also particularly gratifying to me to think that the founder, Sir Alexander Morison, was one of my predecessors as physician to Bethlem Royal Hospital in London. In those days the physician was non-resident; now he is resident, but it was a curious coincidence that I received your gracious invitation just as I had left my post of resident physician to that hospital to engage in consulting practice in Cavendish Square, within a few yards of Sir Alexander's old house.

In respectful response to your kind invitation I have decided to expound the principles and practice of psycho-analysis rather than to weary you with crude trivialities of my own; for, in the domain of mental disease, this new psychiatry, which has not yet received sufficient recognition in this country, is one of the most important problems of the day. I have set myself the difficult task of compressing into the space of three hours the substance of a vast literature on an intrinsically difficult subject, concerning which a complete doctrine has not yet been elaborated, although an enormous amount of patient labour has been expended upon it during the last twenty years.

Psycho-analysis has, of course, met with captious criticism, the inevitable destiny of a new truth, but this has been especially severe in the case of our new psychiatry for four reasons:—

(1) The critics do not read psycho-analytic articles or they do so only superficially, so that they arrive at quite extraordinary misconceptions.

(2) Not one of them has given the method a full and practical trial.

(3) Basing their criticisms upon sentiment and prejudice, they assume an attitude of moral indignation or haughty contempt, seeking an answer to the question, "Are these principles to my liking?" instead of the question, "Are these principles true?"

(4) The critics have been somewhat justified, in that a number of medical men, especially in Germany, practise in various sanatoria and in private what they conceive to be psycho-analysis, without having attempted to master the subject, with the result that they have done their patients more harm than good by filling their minds with all sorts of filthy ideas, and making the most objectionable suggestions by way of therapeutic advice. I need hardly say that such charlatans, for they are neither more nor less, have through their ignorance brought discredit upon the new psychiatry which it does not deserve, for their methods, as I hope to show, are the very antithesis of those of psycho-analysis.

At the present time it would be asking too much of my audience to accept as a scientific truth doctrines which have had their birth in Austria and Germany, where truth appears to be monopolised by professors and divines for academic purposes only, and scientific discoveries are prostituted for

purposes of outrage and destruction of civilisation and all that civilisation means, were it not that I can give assurances that those doctrines have been tested and accepted by earnest workers and profound thinkers in Switzerland, America, and Great Britain. As a matter of fact, Freud himself has no German blood in him, but is a pure Jew, and after all, Science knows no nationality, and the account I present to you is an attempt at compromise between, and combination of, the opinions of many great men.

*Instinct.*—In order to gain clear insight into the principles of abnormal psychology, let us by way of preliminary examine the human instincts.

Instinct is the blind prompting inherent in an animal to act without deliberation in a certain way. An instinctive action is practically perfect on the very first attempt, although there has been no previous education in its performance, and it is of such a nature as to produce certain ends without foresight of those ends. Instincts are perhaps most characteristic among the lower animals. As examples, sexual acts, migration, the first-year bird building her nest and sitting on her eggs, nutrition and care of the young, the lion stalking his prey, and the congregation of certain animals into shoals, flocks, and herds. In man one may instance the first attempt at speech by the human infant, the first attempts to walk, the avoidance of filth, making collections of all sorts of things, seeking the company of the opposite sex, nurture of the young, pulling down the blinds at night, and the congregation into towns and cities. These are but a few examples, but, even if the list were complete, it would be found possible to group all the instincts under two headings, viz., those subserving the function of preserving the individual and those subserving the function of perpetuating the race. They have also been classed into three categories, according as they are moved by the promptings of self-preservation, nutrition, or sex.

*The Herd Instinct.*—Now Dr Wilfred Trotter, in two very able articles in the *Sociological Review* for 1908 and 1909, has drawn our attention to the existence and importance of a fourth instinct, gregariousness, or, as he calls it, the herd instinct. Although this has long been recognised, it had never before been seriously contemplated and studied. When we come to think of it, man is much more dependent upon communal life

than appears at first sight. Left to himself, he is not only extremely miserable, but his faculty of speech is useless to him, and he stands little chance of survival among the other animals. Moreover, his conduct is very largely regulated by the customs of his tribe.

The advantage of gregariousness lies in the homogeneity of the herd, which enables large numbers to act in concert. In hunting and warfare, for example, the benefit of this is obvious, for the prey or enemy is more easily vanquished by a large number of hunters than by a single unit. Such homogeneity is assured by an inherent impulse of each individual to behave in the same way as his fellows and those who depart from the usual customs of the herd cease to benefit from the advantages of gregariousness, if they are not actually killed. The herd instinct, like other instincts, is maintained by natural selection.

So it happens that in company there is an unanalysable feeling of comfort, in solitude there is an unanalysable sense of restlessness and discomfort. This is just instinct. Similarly, if we depart from the customs of our particular "set" in matters of dress, amusement, religion, or politics, either we feel uncomfortable or we are regarded as eccentric, and ostracised. Stage fright and shyness are the outcome of an instinctive desire to leave one's conspicuous position and to become once more one of the herd. Dr Bernard Hart recently drew my attention to a latter-day exemplification of the influence of the herd instinct in the fact that a man, who worries about the ultimate result of the war, ceases to do so when he has enlisted in Kitchener's Army. He has the unconscious feeling that he is within the fold.

Again, man is readily prepared to accept suggestions which are in accordance with the traditions of his particular herd; but he is disinclined to receive new truths which have been revealed by experience. People refused to look through Galileo's telescope, Darwin was considered a madman, the clinical thermometer was laughed at, people refuse to believe in vaccination or inoculation of any kind, new diseases are figments of the imagination of their discoverers, and psycho-analysis is immoral, because the new must always encounter the opposition of the herd tradition. But it must also be remembered that in such instances, herd tradition has to encounter opposition from the

new, and may be gradually overcome until the experience becomes incorporated with the herd tradition.

In matters of opinion, however, such as politics, religion, finance, education, art, literature, and all sorts of public problems, the opinions of the people ranged on *both* sides are based on herd traditions, and no amount of argument will induce them to see the opposite point of view, or even to adopt the only rational position in such matters, viz., that of suspended judgment. On the contrary they find more and more justification for the opinions they hold. In other words, belief comes first, reasons for the belief come second. This process is known as "rationalisation." It may, of course, be used in support of, or in opposition to, scientific truths; but even then "rationalisation" is dependent on the herd instinct for its existence.

How, then, are we to know whether any opinion we hold is rational or non-rational? If we find that we base the opinion on the feeling that any inquiry into the matter would be useless, barren, and superfluous, and that it is foolish, unpatriotic, wicked, or "bad form" to think otherwise, then it must be regarded as irrational, but if our opinion is based on experience, then it is rational.

We have so far been discussing the influence of the herd instinct on intellectual processes, but we shall find that it also lies at the basis of our moral sentiments. Whenever a man does anything which he knows would meet with the disapprobation of friends he experiences a feeling of uneasiness, similar to that caused by isolation, solitude, or separation from the tribe, a feeling of guilt; and when he does something which would be applauded by his fellows, he has a sense of happiness and self-satisfaction. This is, then, the basis of the moral sentiment with which the voice of conscience is indissolubly associated. A non-gregarious animal can do what it likes; it has only itself to consider.

There is a fundamental difference between this herd instinct and the personal instincts of self-preservation, nutrition, and sex. These are dependent on the impulse of the moment; but the herd instinct is a controlling force from without, which is perpetually acting in antagonism to the other three. The child is taught from the cradle to respect the feelings of its companions, to resist its own impulses in order to protect others, to comply with their

desires, and not to be selfish or greedy. And when the sexual passion asserts itself he finds that it is antagonised by a very strict code of conduct, with which it becomes his instinct to comply. Not only must such a passion be denied free play, but he must never allow his genitalia to be seen, and he must not discuss sexual topics or even think about them. The whole subject of sex is taboo, and this is one of the chief reasons why psycho-analysis has encountered severe antagonism. For a long time gynæcology was in the same position for a similar reason.

We find, then, that it is instinct which governs the whole of our mental life. Instinct is no more and no less than "psychical energy," the driving force of mentation to which Jung has applied the name "horme." This word "horme" has a wide signification, applicable to all the instincts, and corresponds to the "libido" in reference to the sexual instinct. "Horme" means physical energy, desire plus a conative trend. In short, I conceive it as being more or less synonymous with instinct, the driving force of our mental life. Every individual is endowed with a certain quantity of horme. Sometimes it is active in one direction, sometimes in another; it is never quiet. Comparable to physical energy, which may display itself as movement, sound, heat, light, electricity, or chemical action, it is never lost, and the principle of the conservation of energy is to be regarded as equally applicable to both psychical and physical energy. If a certain amount of horme or psychical energy in a given patient appears to be lost, it becomes our duty to discover where it has gone; but I will return to this subject later.

There is, as I have just suggested, a constant play between the instincts, one giving place to another as occasion arises; but when a herd impulse becomes displaced by the driving force of some other instinct, mental conflict ensues, there is a situation to be faced, and a way out of the difficulty must be found. "'Twixt love and duty" has always been a favourite theme with artists, novelists, poets, and philosophers. If duty fails, that is to say, if the herd instinct fails, some way must be found to pacify the guilty conscience.

The conflict may be resolved in one of four ways.

Firstly, the influence of the herd instinct may be recognised and its influence voluntarily ignored, the delinquent avowing to himself that he has a perfect right to do as he likes. The herd



instinct is so strong that this process is, as a rule, difficult; but everybody knows that such unscrupulous persons undoubtedly exist.

Secondly, the offence may be condoned by "rationalisation," the offender excusing himself on the ground that he is otherwise a very good fellow. He goes to church regularly, subscribes to the charities, and is a good patriotic citizen, the logical fallacy here being, of course, the *ignoratio elenchi*.

Thirdly, the emotional tone or affect of worry may gradually pass off as years roll by, and he becomes occupied with other matters in just the same way as we do not feel, after the lapse of time, the loss of a dear friend to the same extent as when we first hear the news of his death.

And lastly, the incident may refuse to become assimilated to the existing content of consciousness and be forgotten. The memory is banished from consciousness, but this does not mean that it is banished from the mind. It means that an attempt is made to repress it into a department of mentation from which it can never again enter phenomenal consciousness and disturb the normal stream of associative thought. Later on we shall have to discuss what happens should this repression subsequently fail, as it frequently does.

*The Unconscious.*—This brings me to one of the fundamental bases of Freudian psychology, viz., the conception of the unconscious.

At any given moment during a stream of thought there are only one or two ideas present in phenomenal consciousness. Under certain conditions in the psychological laboratory it is possible to demonstrate that as many as six or seven ideas may be present in consciousness at the same time, but in practical thought seldom more than two ideas occupy the field of attention.

In close association with these ideas, however, at what is sometimes called the fringe of consciousness, but outside the field of attention for the moment, there is a much larger number of precepts, ideas, and other mental states. These have been grouped together for practical purposes, and called the "subconscious."

There still remains a large number of ideas and memories quite outside the field of attention, but capable of recall when required. These are known as the "foreconscious" or "preconscious."

Now there is an enormous number of ideas of past experiences,

incidents, and situations which we cannot by any possibility remember, no matter how hard we try. For these there is a life-long amnesia. Nevertheless, they are not lost. They sometimes flash into the mind in moments of abstraction and during dreams, it is said that they are all passed in review during drowning, and they can be recovered by such artifices as hypnotism, crystal-gazing, and psycho-analysis. This group of ideas is called the "unconscious." The name is perhaps a little unfortunate, because "unconsciousness" has nothing to do with these phenomena, which were recognised in this country long before Freud's day, and were described as "unconscious cerebration." I believe that the *name* was then the chief reason for their non-acceptance, for it was rightly contended that "unconscious cerebration" is a contradiction in terms. If hybrids were tolerated, I would suggest some such name as "hypoconscious" for such mental states. It is not usually pretended that every incident that has ever happened in our lives is conserved in the unconscious (although Bergson does), but it would certainly be true to say that all experiences which have been accompanied by a strong affective tone are conserved, even right back into early infancy.

*Psychical Determinism.* — Another fundamental doctrine of Freudian psychology is that of "psychical determinism," which postulates that every mental process is predestined and fore-ordained. According to Jung, such predestination is due to the conscious activity of a higher power, God or world-consciousness; but Freud ascribes it to an unerring scientific law of causation.

While recognising that there are certain characteristic tendencies and reactions, physical and psychical, common to all mankind, and given to us by heredity and evolution (the inherited instincts already mentioned), we must also take into account the fact that the experiences of every one of us differ from those of all other people. Instinct is the driving force which causes A and B to act in the same way when confronted with a given situation, but their thoughts and actions in association therewith are differently carried out because their individual experiences are entirely different. These, and other considerations to be discussed presently, led Freud to the study of "individual psychology," one outcome of which has been the enunciation of the doctrine that for every psychic fact there have been efficient and logical antecedent causative mental states in the present life-history of

the individual, and that there is a continuity of mental associations from the cradle to the grave. In other words, there is no such thing as chance in the determination of a thought.

To take a favourite example. Suppose I ask you to think of a number, and you take the trouble to investigate your particular association with the number selected, you will find that the number has some relationship with an item of your experience associated with the present content of your consciousness. Under the circumstances, no other number could have occurred to your mind; the mental process concerned is absolutely governed by the laws of association of ideas.

*Complexes.*—The number is one unit of a constellation of ideas, another unit of which is one idea now present in your consciousness. When such a constellation is repressed and partly unconscious, it is known as a "complex."

I give a few examples to make my meaning clear.

While preparing these lectures, any patient exhibiting a good example of mental processes I am now endeavouring to explain caused me to think of the Morison lectures, as also did mannerisms of people I met in the street, certain items of information in books, thoughts of the unconscious motives of war, and incidents of psychological interest on the battlefield, papers read to less distinguished audiences, mental facts in my own life, and a host of other things. In other words, I have had a "Morison lecture" constellation of ideas. It has not been repressed, and should therefore not be called a "complex."

I meet a man in the street who at one time did me a considerable injury by reason of certain jealousies, &c. He is the centre of a number of ideas of difficult situations and incidents which caused me perplexity at the time, but are now repressed and partly forgotten; but I feel vexed when I see him. This is one of my complexes.

A favourite example is that of a young man in love. His emotional state tends to constellate all his ideas to the one central figure, his lady-love, no matter how remote the association may be. The act of writing at his office desk reminds him of writing to his adored one, a luxurious motor car makes him think how she would look in it, a chance resemblance causes him to wonder "Is it she?" The sermon at church contains many allusions to his love for her, and all nature echoes his happiness. It is the

"love " constellation or complex. In fact, the whole of our unconscious mind is made up of complexes, and the total mass of these taken together constitutes the "ego-complex."

A complex, then, may be defined as a repressed system of ideas having a constant conative trend or emotional tone, and directed towards determinate actions and thoughts. A complex is therefore possessed of a certain amount of energy, and, since complexes can generally be referred to some instinct, we may regard this energy as a manifestation of the hormone we have already discussed. The liberation of this energy by discharge, either by an outburst of emotion or by the fulfilment or realisation of the conative object of the complex, is known as "abreaction." Abreaction of the love-complex, for example, is the possession of the desired object of affection.

*Conflict.*—We are now in a position to consider in rather more detail the phenomenon of "conflict." When there develop in the mind two complexes which are out of harmony with one another, and mutually repel or paralyse each other, conflict ensues. A hypothetical instance of conflict between two nutrition complexes is given in the fable of the animal which died of starvation when, suffering equally from hunger and thirst, it found itself midway between a basket of food and a pail of water. Conflict occurs between two self-preservation complexes when a man finds himself stranded on the high Alps, when inactivity means death from starvation, and an attempt to reach the valley threatens death from precipitation. Conflict arises when a man finds he has fallen in love with two women at the same time. But conflict never arises between a nutrition complex and a sexual complex, or between a self-preservation complex and a nutrition complex, unless, of course, the nutrition complex is so urgent (as in the above instance) that it constitutes at the same time a self-preservation complex. Conflict between a sexual complex and a self-preservation complex is fairly common, and either may win, as in the question of plunging into a marriage which is inimical to one's life interests, or facing death to save a loved one from danger.

In practical experience, however, we find that by far the greater majority of conflicts occur between a personal complex and a herd complex, that is to say, between morality, religion, ethics, or fashion, on the one hand, and nutrition, self-preservation,

or sex on the other. Now the only ways in which nutrition complexes and self-preservation complexes can conflict with the herd instinct are by such crimes as murder, theft, and dishonesty; but there is only one way in which satisfaction of the sexual instinct does not conflict with the herd instinct, viz., by legitimate wedlock.

Masturbation, homo-sexuality, adultery, incest, fetichism, sadism, exhibitionism, and bestiality, many of which are exceedingly common, are all under the ban of the herd; and it so happens that we find, as a matter of practical experience, that by far the majority of conflicts, which we find on psycho-analysis to lie at the root of the neuroses and psychoses, are between a sexual and a herd complex.

Now a conflict cannot be allowed to persist for ever. It is a biological necessity that some way out of the difficulty must be found. The normal and logical way out of the situation is to face it, to recognise that there is a conflict, to consider what is the right and proper course to pursue, and to take that course, at the same time admitting to oneself that such a conflict has existed.

If, on the other hand, the victim refuses to face the situation, and attempts to evade it, this may be done, as I have already mentioned, in one of four ways.

Firstly, he may recognise the influence of the herd instinct and refuse to be guided by it. In my experience this is, as a rule, not very successful. The herd instinct is a true instinct and refuses to be repressed, with the result that the patient suffers from remorse, usually accompanied by an unexplained headache and other neurasthenic symptoms which are very difficult to dislodge.

Secondly, he may seek refuge in "rationalisation," keeping his conflicting personal complex in a "logic-tight compartment" of the mind. The swindling financier refuses to acknowledge to himself that he, as a financier, is the same individual who reads the lessons at church and built the local almshouses, or he condones his swindles with acts of piety and charity. This is an example of what is known as "dissociation," or, as Janet calls it, the "splitting of consciousness." This phenomenon occurs quite commonly when, for example, we converse on one subject, and write a letter about another, and it is quite possible for our financier, while reading the lessons, to be at the same time

devising some scheme whereby he may succeed in transferring somebody else's banking account to his own.

In pathological domains we observe a similar splitting of consciousness in the general paralytic who, while believing himself to be God Almighty, begs his attendant for a cigarette, or in the asylum queen, who is elated in being the chosen patient to wait on the nurses.

Dissociation occurs also during the "automatic writing" of certain hysterical patients. If such a patient be given a pencil and a piece of paper, and be held in conversation while a third person whispers questions into the patient's ear, she will correctly answer the questions by writing, all the while being unconscious of the fact that she is writing.

Another variety of dissociation occurs in the cases of "double consciousness." Here the patient has two entirely different personalities, each being independent and unaware of the existence of the other. Robert Louis Stevenson has dramatised the condition in the familiar play, "Dr Jekyll and Mr Hyde," and I need not quote the well-known case of the Rev. Ansel Bourne, reported by James and Weir-Mitchell. Marandon de Montyel placed on record the case of a man who remembered nothing between being about his business in Paris and returning to his normal personality on board a ship bound for Bombay. Records of many similar cases are to be found distributed throughout the literature.

Thirdly, our victim of conflict may allow the energy of his complex to be diverted into other channels than the natural one. This process is called "sublimation," and the best examples are again to be found in the domain of sex.

The old maid has at one time been possessed of a sexual instinct quite as strong as that of her married sisters, but its natural outlet has been denied her. What outlets can she find for her pent-up energy? She devotes much to dress, which is often extravagant, or she indulges in all sorts of gaieties, or she takes to nursing, or, by a kind of transference, she interests herself in Society news, especially of the type to be found in so-called "Society newspapers," and she loves to read the details of marriages and scandals. Moreover, her maternal complex has to be satisfied, and she reads the columns of births daily, and bestows her maternal affection on cats, dogs, and parrots.

A man may sublimate his sexual instincts into dangerous sports. In the early days of aviation, when it was much more dangerous than it is now, an acquaintance of mine took to this sport when the circumstances of his marriage became somewhat distressing. Sexual sublimation in men also takes the form of academic interests, increased professional activity, travel, collecting manias, and alcoholic excesses. For reasons which need not be discussed for the present, Freud regards smoking as being frequently a sexual sublimation; but I am sure that it is a common sublimation of other complexes.

Sometimes sublimation takes the form of inversion or representation of the opposite. The old maid, for example, often betrays her sexual complex by extreme prudery or by devoting herself to excessive religious exercises.

Displacement of masturbation usually takes the form of the victim handling his body in other ways, such as nail-picking, nail-biting, or nose-picking; but these should not be called sublimations, because this term always means diversion to useful, social aims.

Fourthly, lastly, and most important of all, the conflicting personal complex may refuse to become assimilated to the normal content of consciousness and become forgotten. Perhaps a better way of putting this is to say that the victim refuses to admit to himself that such a complex ever existed. The popular way of expressing this is to say that he "puts it out of his mind," but what really happens is, as we shall see later, that he puts it into his mind, pushes it in deeper into the unconscious, or, as we say technically, "represses" it. This is the phenomenon of "repression," really another form of "dissociation," or "splitting of consciousness." It differs, however, from the previously discussed variety in that a complex dissociated by repression has an autonomous existence. There is a constant resistance against the elements of a repressed complex becoming associated with those of phenomenal consciousness. This resistance, which is nothing more than a continuation of the original repression, is called by Freud the "censure," and has been personified by his English and American translators into the "censor."

Now it is clear that it must be a very difficult matter for the normal train of thought to proceed year in and year out without once touching upon some idea which tends to become associated

with some element of the repressed complex. Such ideas and other mental states are bound to occur, and, since the "censor" will not allow repressed ideas to enter consciousness, the only possible alternative is that conscious ideas become anchored to the unconscious complex. The result is that the unconscious tends to grow at the expense of the conscious; and it may be taken as a rule that the greater the emotional tone of the original complex, the greater does that complex grow when it becomes unconscious. The fact that the unconscious grows constantly at the expense of the conscious explains why a case of long duration takes so much longer to cure than a case of recent onset.

"Dissociation" and "repression" are closely allied to one another, and it will also be observed that "sublimation" usually involves "repression." The old maid's prudery is an obviously successful method of repressing her sexual complex, and her fondness for domestic pets subserves the repression of her maternal complex.

It is not to be supposed that sublimation and repression are usually pathological or abnormal. On the contrary, they take place to an enormous extent in the earlier years of us all, and play an important rôle in early education, whereby our naturally vicious animal energies are repressed into the unconscious, and sublimated into useful activities. It follows that our unconscious consists for the most part of infantile complexes, and this accounts to some extent for the amnesia which veils the first years of childhood. It is true that this amnesia is partly due to the fact that many of the cerebral neurons are not yet myelinised, but that this is not the only reason is evidenced by the fact that the amnesia is here and there broken by isolated memories of unimportant incidents. Freud has called these "cover-memories," because they serve to displace memories of important events.

When these repressions or sublimations for any reason fail, we have the conditions necessary for the development of neurosis or psychosis, conflict occurring between the repressed complex and the existing content of phenomenal consciousness. Under such circumstances the complex escaping from repression is distorted and disguised by way of an attempt to render it acceptable to consciousness, and its distorted manifestations constitute the symptoms of the disease. Solution of the difficulty and cure of the disease are accomplished by revealing to the patient,



through his own association mechanisms, the full content of the repressed complex. How this is to be done I will explain in my next lecture.

I have already mentioned that complexes related to the sexual instinct are repressed more than any other. It is, therefore, not surprising to find that these play an enormous rôle in the psychoses, and a knowledge of the development of the sexual instinct is so essential to any comprehension of the new psychiatry that I must discuss this matter in some detail. I ought to say that this knowledge has been gained, in the first instance, entirely through psycho-analysis.

*The Sexual Instinct.*—Those members of my audience who have devoted their attention to the study of disease in children, especially nervous disease, will be the first to admit that sexuality is not a function which suddenly springs into being at puberty, but that it gradually develops from small beginnings in the earliest infancy. Freud considers that sucking the mother's breast is partly a sexual act, but Jung dissents from this view, and considers the act of sucking the breast to be purely nutritive in function. Both these leaders of thought agree, however, that thumb-sucking, which follows shortly afterwards, is of undoubted sexual import, and many shrewd mothers are independently capable of discerning masturbatory significance in this common infantile action. Indeed, any action in which the child habitually handles the body, such as nose-picking, nail-biting, or rubbing its abdomen, is to be regarded as betokening a masturbation complex.

Now in adult life many of the sense organs are capable of stimulating the sexual instinct; for example, the eye (in seeing a beautiful face or figure), the ear (in hearing a beautiful voice or the rustle of a dress), the nose (in sensing certain odours characteristic of the opposite sex), and the skin (in feeling the skin of a member of the opposite sex, or even, with some people, experiencing a sense of pain); but the centre of maximal stimulus is the genital organ. In the child, however, there is no centre of maximal stimulation to be discovered, the pleasure-arousing area being equally diffused all over the body, and therefore so much the less stimulating in any given zone.

Freud has discovered, however, that even in the young child there are certain areas the irritation of which produces greater

gratification than elsewhere. Although these lie at the foundation of the sexual instinct, it is not suggested that the child himself has any idea of the nature and significance of these sensations. These areas, which I am about to mention, have been called by Freud the "erogenous zones."

I have already referred to the mouth. Freud and others discern something of the nature of an orgasm when a satisfied baby becomes flushed, leaves the breast, and sinks into slumber. It has also been observed that thumb-suckers are liable to manipulate or rub their breasts during pleasure-sucking, and this is said to be the first step towards masturbation. Energetic suckers in infancy are said to be very fond of kissing when they reach adult life, and if at any time the complex becomes repressed, there are produced such symptoms as hysterical vomiting, aversion from eating, hysterical globus, choking sensations, snoring in the throat, and disturbances in eating. These are some of the arguments used in support of the view that the mouth is an erogenous zone, and some of the symptoms suggest that Freud is right in his view that breast-sucking for the purpose of nourishment is partly of sexual import. It is at least obvious that the first sensory stimulus the mouth receives is from the mother's breast, and our other considerations suggest that the baby's mouth should not be stimulated more than is necessary for purposes of nutrition. This is an argument I have not previously heard against the use of "dummies" or "comforters."

Another important erogenous zone lies at the other end of the alimentary canal, the anus. It is often observed that the "intestinal catarrhs" of infancy give rise to "nervousness," but the erogenous significance of the anus is noticeable in children who voluntarily retain their *fæces* until violent muscular contractions necessitate expulsion. The pain caused by the passage of the larger accumulation is accompanied by a pleasurable sensation, which the child seeks to experience again. It is a variety of masturbation. This habit, which is a sure premonition of subsequent eccentricity or neurosis, plays an important part in the production of the constipation so common in neurotic patients, and Ernest Jones has recently shown that it lies at the foundation of the sadistic complex which is responsible for the compulsion neurosis. Incidentally I may mention that a large number of such patients have private secret customs and ceremonials of

their own, which they habitually observe when they retire to evacuate their bowels. People who have succeeded in repressing the complex become in after life methodical, thrifty, and head-strong. It would appear that the desire to retain *fæces* becomes sublimated into the desire to retain money, and those of you who have had experience of psycho-analysis know how commonly in the neurotic "*fæces*" symbolises "money."

The third erogenous zone is the neck of the bladder. Freud has discovered that, whenever enuresis nocturna is not caused by epilepsy, it represents a pollution corresponding to a sexual dream. It may, of course, have its physical causes such as adhesion of the prepuce, but that does not affect the main question. It is not commonly apprehended that bed-wetting is a source of gratification to the infant. Bed-wetting in childhood plays an important rôle when neurosis develops in after life.

The fourth erogenous zone is the inner surface of the thighs. Pleasure experienced by rubbing the thighs together is often to be observed in quite young infants, especially females.

Even in the earliest years, therefore, there is a tendency for such pleasurable sensations to be localised to the neighbourhood of the genital area, and Nature appears to have made special provision for their periodical excitation by uncleanness and consequent cleansing.

The period we have been discussing is characterised by the infant finding a kind of gratification in the stimulation of parts of its own body. About the third or fourth year, however, the whole of this infantile sexuality becomes repressed by education and by the development of feelings of shame, loathing, disgust, and morality. It is during this stage of repression, the "latency period" as it is called, that the infantile germs of sexuality become sublimated and applied to refining, cultural and social ends; but, should misadventure or adversity befall this sublimating process, the child is destined to become the victim of neurosis.

From the fifth or sixth year onwards, in what Jung has termed the "pre-pubertal period," we begin to observe a recrudescence of sexuality, but it differs from the first period in that the child now strives to come into closer relationship with the outside world. The first was a period of "subject love," or autoeroticism. This is a period of "object-love," and the child seeks to love somebody other than itself. Naturally the first object of its affection is the

person with whom it is brought into closest relationship, viz., the mother or the nurse. This is, of course, due to a feeling of dependence, and is therefore very strong. Even as early as this we can discern some psychical differentiation between the sexes, for the boy's love is mostly directed towards his mother and the girl's towards her father. It is also to be noticed that a boy loves his sisters more than his brothers, and a girl loves her brothers more than her sisters. Even childish love affairs with others are of greater significance than is usually thought. It has been erroneously supposed that fixation of a boy's love on his father or of a girl's love on her mother, during this undifferentiated period, laid the foundations of inversion or homosexuality, either manifest or unconscious, but psycho-analytic experience gives no support to this view. On the contrary, it is found, curiously enough, that inversion arises from fixation on and identification with the parent of the opposite sex, as I shall explain presently.

The child's sexuality at this stage is, as Freud has termed it, "polymorphous-perverse," and untoward incidents are liable to direct his instinct into wrong channels. Encouragement of the natural tendency to undress before others may lead to exhibitionism; the habit of inspecting one another's genitals, if opportunity is allowed, may lead to the "peeping tendency," and desire to see the genitals of others, especially of their elders. Such curiosity begets an aggressive disposition, which in turn serves as a groundwork for the sadistic instinct, whose special feature is the association of cruelty with the sexual impulse. Masochism, in which the sexual impulse is aroused by certain experiences of mental or physical pain, can most often be traced to punishments inflicted during childhood.

Inversion or homosexuality arises in this way. It is normal for the child to develop curiosity respecting sex and birth processes. Indeed, it is only natural that he should want to know where a new brother or sister comes from, for such a person threatens to displace him, and to absorb the love of his mother which has previously been lavished on him. He is jealous; but this is a digression. The normal boy imagines all people, including his mother, to be fashioned like himself in every detail. Accordingly, if the time when he is disillusioned arrives too late, and incest barriers demand that his affection should be transferred elsewhere, he can only fall in love with a person fashioned like

himself. Such individuals, therefore, seek as cohabitators either boys or effeminate men. Girls, who develop the converse phantasy, become homosexuals in a similar way.

As I have just hinted, the normal change which takes place at puberty is the erection of incest barriers, whereby the love for the parents becomes gradually weakened as the adolescent becomes attracted to persons of the same age, but of the opposite sex. I say "of the opposite sex," but it must be remembered that the sweetheart is of the same sex as the child's first love. Moreover, the parents usually serve as an unconscious pattern for the mates of young people. Boys have a natural inclination to some girl resembling their mother, and girls to some boy resembling their father.

There are some individuals who linger over intermediate sexual attractions so that their libido becomes permanently fixated on these, instead of passing them over rapidly on the way to an ultimate sexual goal. Such a condition is known as fetichism, and the victims are fetichists. They find an ultimate sexual goal in seeing or feeling the hand, foot, or hair of a woman, or in hearing her voice; or their libido becomes fixated on some impersonal object such as a shoe, a handkerchief, fur, velvet, &c.

When these perversities are manifest to any given person and self-avowed, they do no harm to his nervous system; indeed, many perverts have shown themselves to be of exceptional intellectual ability. Voltaire has confessed to systematic masturbation, Rousseau was an avowed masochist, and it will be easy for you to recall the names of homosexuals of great ability in professional directions; but, when such perversities are repressed in an individual, he constantly runs the risk of neurosis through his repressed complex escaping the repression. If, for example, a repressed homosexual, that is to say, a person who has developed unconscious homosexual tendencies and does not know it, gets married, he is almost certain to develop neurosis or psychosis.

Now when conflict arises between a repressed complex and phenomenal consciousness, in other words, when an unconscious complex strives for recognition, and consciousness, or perhaps I ought rather to say subconsciousness, endeavours to maintain the repression, neither one nor the other achieves success, and the result of the conflict is a compromise, this being none other than a symptom or group of symptoms of neurosis or psychosis. The

discussion of the various mechanisms which come into play in this process I will postpone until the consideration of dreams in my next lecture, for the mechanism of dreams is almost exactly the same as that of the insanities. We shall find that, in its attempt to escape repression, a complex becomes distorted and disguises itself in such a way that its true nature is not revealed to consciousness.

Some of the infantile complexes to which I have referred will still remain somewhat obscure unless their nature is fully apprehended, and I must revert to the relationship between parents and children, as it is unconsciously conceived by the child. As I have already submitted, the mother is the boy's and the father is the girl's favourite parent. Now, this means a great deal more than appears at first sight, for it has been established from the study of children and from the dreams of adults that the boy's love for his mother is of such a character that he resents sharing his mother's love with anyone else, especially the father. A very large number of boys ask their mother at some time or other whether she loves him or "daddy" the more, and the child usually receives (quite rightly from an educational point of view) a disappointing answer. The boy is jealous of his father, and, similarly, the girl is jealous of her mother. Each, in fact, wishes the parent of the same sex out of the way; and may go so far as to dream of the death of this parent. We shall see in the next lecture that a dream is the realisation of a wish.

This incest-complex, which exists in the unconscious of every individual, normal or abnormal, is known, in the case of a man, as the *Œdipus-complex*, and, in the case of a woman, as the *Electra-complex*. *Œdipus* was a king of Thebes who had the misfortune to slay his own father, and unwittingly to marry his mother. *Electra* was the daughter of *Agamemnon* and *Clytæmnestra*; she assisted in the murder of her own mother to avenge the death of her father.

In a very large number of cases it can be demonstrated by psycho-analysis that such complexes play an important part. We expect to discover it especially in patients who, in spite of normal heterosexuality, and in spite of encountering many opportunities of and even calls to marriage, have reached middle age without having engaged in matrimony. This is especially

to be found in only children, whose fixation of libido upon their parents is exceptionally difficult of transference elsewhere, and whose parents tend to foster the delusion that there does not exist in the wide world a suitable mate for their darling child.

The conclusion at which we have arrived from all these considerations is that our unconscious mind is on a lower, less mental, more neural, and more animal plane than our conscious mind, and it is pervaded with sexual thoughts and desires. Indeed I believe that I am not misrepresenting Freud when I say that he thinks that the unconscious mind is almost all sexual; but then it must be recognised that he uses the word "sexual" in a very wide sense. Attraction, friendliness, shame, modesty, and disgust are all included under this term by Freud. Nevertheless, psychoanalysis has revealed that, if our repressed mental material had free play, uncontrolled by consciousness, every one of us "would probably remain a selfish, impulsive, aggressive, dirty, immodest, cruel, egocentric, and conceited animal, inconsiderate of the needs of others, and unmindful of the complicated social and ethical standards that go to make civilised society."<sup>1</sup> To the ordinary man, whose "herd instinct" has repressed such intolerable features of his character into the unconscious, and converted him into a moral, social, ethical, modest and æsthetic being, it is incredible and absurd that his mental constitution and disposition are fundamentally so brutal. He is prepared to accept the fact that his anatomical and physiological characteristics are identical with those of the lower animals; but his mental characteristics—never! And so from time to time we find in the medical journals energetic objections to our new psychiatry, of course by people who have not studied it. These letters are interesting examples of what is technically known as the "resistance," which we shall study in our next lecture, and are unwilling arguments in support of Freudian doctrines.

In the *Medical Press and Circular* for 13th June 1894 is to be found a paper by the late Dr Hughlings Jackson, entitled "The Factors of Insanities," and it will be there seen that that great man foresaw the fundamental principles of our new psychiatry. He pointed out that there is a positive and a negative element in every case of insanity, the negation being defect of consciousness or loss of *some* consciousness, the positive being activity of

<sup>1</sup> Ernest Jones, Brit. Med. Ass. Ann. Meeting, 1914.

the consciousness remaining (on a lower level). For example, when a patient believes himself to be the Emperor of Europe, Hughlings Jackson points out that the chief defect (negative element) of consciousness is that he does not know that he is a clerk in the city, and the notion that he is the Emperor of Europe is due to the positive activity of a lower level of mentation. This is exactly what has been proved by our modern school of psychiatry. So far as consciousness is concerned, we know that it always loses something of its content, a complex which is repressed into the unconscious, while the positive symptoms of an insanity are due to the distorted activities of the unconscious (a lower level of mentation). While, therefore, we study and admire the insight and patient labour of the great Austrian psychologist, Professor Freud of Vienna, let us at the same time pay homage to the great English father of neurology, who taught us to understand the nervous system, Dr Hughlings Jackson.

## Abstracts

### ANATOMY.

**AN ANATOMICO-PHYSIOLOGICAL STUDY OF THE POSTERIOR (165) LONGITUDINAL BUNDLE IN ITS RELATION TO FORCED MOVEMENTS.** L. J. J. MUSKENS, *Brain*, 1914, xxxvi., p. 352 (15 figs.).

MUSKENS' experiments, of which there were a large number, were mainly on cats. The following are some of his chief conclusions:—

Ascending degeneration of the crossed vestibulo-mesencephalic bundle, which forms part of the posterior longitudinal bundle till near the nucleus of the posterior commissure, is always associated with circus movements to the side of the intact posterior longitudinal bundle, provided that other parts of the vestibular systems are intact. The same result is obtained when the lesion is in the heterolateral Deiters' nucleus. Lesions of the tract lying immediately lateral to the above vestibulo-mesencephalic bundle—ascending fibres from Bechterew's nucleus—are also associated with a circus movement. In addition, in



both cases there is conjugate deviation of the head and eyes to the side of the movement.

The posterior longitudinal bundle is combined of ascending and descending tracts, which control the co-ordination of head and eye movements, and control also the maintenance of the equilibrium of motion.

It is only in the mammal that these circus movements are obtained. The author suggests this is because only in mammals are the hypothalamic and commissural nuclei sufficiently connected with the prosencephalon for section of the connections to be followed by asymmetrical locomotion: it is only in mammals that stimulation of certain areas of the cortex is followed by conjugate deviation of the head and eyes to the opposite side.

Lesions of the complex vestibular root are followed by rolling movements to the injured side, with skew deviation and conjugate rotation of the eyeballs around their antero-posterior axis.

Lesions of Deiters' nucleus proper are occasionally associated with rolling movements to the side of the lesion, as also of the ascending tract from the nucleus lying in the outermost part of the lateral horn of the posterior longitudinal bundle.

The descending connections from Deiters' nucleus are more important in the production of rolling movements than the connection of the superimposed mesencephalic structures. Relatively few descending fibres which originate in the structures associated with circus movements pass beyond the sixth nucleus.

S. A. K. WILSON.

**A NOTE ON THE COURSE AND DISTRIBUTION OF THE (166) NERVUS TERMINALIS IN MAN.** ROLLO E. M'COTTER, *Anat. Record*, 1915, ix., March 20, p. 243 (2 figs.).

THE distribution of the nervus terminalis in man as in the rabbit is mainly to the mucosa of the nasal septum anterior to the path of the vomero-nasal nerves. The ultimate termination of the fibres could not be determined. (*Cf. Review*, 1914, xii., p. 201.)

A. NINIAN BRUCE.

## PATHOLOGY.

**THE BRAIN OF A MACROCEPHALIC EPILEPTIC.** J. WIGGLES- (167) WORTH and GEORGE A. WATSON, *Brain*, 1914, xxxvi., p. 31 (7 figs.).

A VERY complete record of the macroscopic and histological appearances of the brain of a macrocephalic epileptic.

The patient, who died at the age of 37, was of at least average

general intelligence, and showed no mental deterioration until the onset of fits at puberty.

The brain, unstripped of membranes, had a total weight of 2,130 g., being one of the largest of which there is any authentic record. Its different parts appeared to be in about normal proportion, except that the occipital lobes were relatively somewhat small.

The highly complex pattern of the cerebral hemispheres is illustrated by photographs and freehand drawings. In the convolution pattern there is little evidence indicative of inferiority; the increased size of the encephalon, and the great complexity of pattern, constitute the main points of difference from the normal type, for the indications of defective formation are not more pronounced than those found in the majority of human brains.

The increased developmental activity has proceeded on regular lines, and on the whole the departures from the normal convolution pattern are in the direction of superiority, as is indicated by the duplication and triplication of sulci. Microscopic examination reveals slight evidence of defective nervous development, apart from which the hemispheres appear to be in every way normally constituted; their great size and weight cannot be accounted for by the very slight increase in neuroglia and thickening of vessels which existed.

The pathological changes found do not differ from those usually present in chronic epilepsy. An important, though negative point, is the absence of general neuroglia hyperplasia, which has been considered to form the basis of cerebral hypertrophy. So-called cerebral hyperplasia embraces two distinct classes, unilateral or localised, and general.

The writers consider that their case belongs to the second category; it closely resembles an instance of general hypertrophy of the brain recorded by Anton, who was unable to find pathological changes apart from those usually associated with epilepsy.

None of the conditions which have been assigned a causal relationship appears to have been present. Although not subjected to histological examination, the internal secretory organs appeared to be normal. The pathology of the condition therefore remains obscure. The presence of epilepsy suggests that the usual size of the brain cannot be largely exceeded without introducing a condition of instability which renders its possessor liable to suffer from some form of nervous breakdown, and especially from epilepsy.

R. M. STEWART.

**EXPERIMENTAL AND PATHOLOGICO - ANATOMICAL RE-**  
(168) **SEARCHES ON THE CORPUS CALLOSUM.** C. T. VAN  
VALKENBURG, *Brain*, 1914, xxxvi., p. 119 (25 figs.).

A RESEARCH devoted to a consideration of the commissural fibres of the corpus callosum.

The usual lines of investigation have hitherto yielded no conclusive results. The study of teratological cases (agenesis of corpus callosum), the employment of embryological methods, and the investigation of secondary degenerations have afforded little information on the normal course of the callosal fibres.

The author in his experiments on mice, rabbits, and cats kept in view the desirability of controlling his results by known anatomical facts. Different lengths of the corpus callosum were divided sagittally in a number of animals in order to determine from which cell layers of the cerebral cortex callosal fibres arise, and to demonstrate in which layer of the cortex they end.

The staining methods of Weigert-Pal and Nissl were employed, the first to trace secondary degeneration of fibres, the second in order to demonstrate the reaction in their cells of origin.

From experiments on the rabbit and mouse he concludes that the origin of the callosal fibres lies in the subgranular layers of the cortex (regio præcentralis, regio post-centralis, regio parietal sup.). Callosal fibres end in the same regions, but whether the connection is homotypical or heterotypical could not be determined. In his description of pathological cases the writer uses the numerals employed by Brodmann in his cerebral topography.

The following conclusions may be drawn. The tapetum and forceps, forming a well-defined isolated system, are at least partially composed of callosal fibres. The area striata (Elliot Smith) neither receives nor gives origin to callosal fibres. This absence of a commissural connection between the two visual areas is both physiologically and clinically of the highest importance. It seems probable, however, that a commissural connection exists between the cortical centres from which eye movements can be evoked.

In the posterior central convolutions :—

1. The relation of the origin and termination of the callosal fibres is not definitely local.
2. The ending of these fibres is relatively diffuse.
3. Fibres end here which come from the contra-lateral gyrus centralis anterior, and to some extent, at least, the origin and termination both in front and behind the sulcus centralis are situated in the same horizontal level.

On the other hand, the anterior central convolutions are:—

1. Connected homotypically, in the sense that the origin of cortico-fugal fibres is more or less surrounded by a radiation of fibres from the homologous spot on the opposite side. It is doubtful if there exists a heterotypical connection between the gyri centrales anteriores.

2. They are connected with the contra-lateral gyrus centralis posterior in the manner described above. The fibres which form this heterotopical connection are apparently far more numerous. The cortico-petal callosal fibres ascend in the cortex as far as Brodmann's layer 4.

Cortico-fugal callosal fibres run in compact bundles between the cortex and the lateral portion of the corpus callosum; they run almost vertically to it.

The fasciculus subcallosus establishes numerous connections with the cortex of the fronto-parietal region, and with the basal ganglia.

The fasciculus occipito-frontalis receives fibres from the median part of the internal capsule. From its tip fibres pass through the callosal radiation towards the dorso-median gyri. There are grounds for believing that the corpora striata are commissurally connected; certainly the statement that the corpus callosum simply connects the cortex of both sides must be abandoned. The paper closes with some interesting remarks on mind blindness and indirect apraxia (apraxia callosa), considered in the light of the above investigations.

R. M. STEWART.

**ON THE ORIGIN OF THE "PLASMAZELLEN" AND THEIR  
(169) PRESENCE IN THE CIRCULATING BLOOD. (Su l'origine  
delle "Plasmazellen" e la loro presenza nel sangue circolante.)**  
L. MATTIOLI, *Riv. di Patol. nerv. e ment.*, 1914, xix., p. 266.

As the result of experiments on rabbits and dogs, and examination of the tissues of the same animals suffering from coccidiosis, glanders, and in a healthy state, the writer came to the following conclusions:—

1. The "Plasmazellen" have a double origin from the lymphocytes and the adventitious cells.

2. The "Plasmazellen" may enter into the circulation, but this finding is very inconstant.

3. Their capacity for migration maintained by some authors is not confirmed by the writer's researches.

4. In the tissues examined, the "Plasmazellen," as already shown by Cajal, Dominici, Martinotti, and others, form a normal constituent of the lymphomyeloid and connective tissues.

5. Injection into the circulation of the serum of general paralytics produced a basophile leucocytosis, characterised by the presence in the circulation and hæmopoietic organs of basophile mononuclear elements, which, especially by their morphological characters, must be distinguished from "Plasmazellen," and belong to the "pseudoplasmazellen" first differentiated by Hodaia.

6. The "pseudoplasmazellen" (polyblasts of Maximow) are a normal constituent of inflammatory granulation tissue.

J. D. ROLLESTON.

**THE ACTION OF THE MICROCOCCUS MELITENSIS AND ITS  
(170) TOXINS ON THE CENTRAL AND PERIPHERAL NERVOUS  
SYSTEM.** (L'azione del micrococco di Bruce (melitense) e delle  
sue toxine sul sistema nervoso centrale e periferica.) R. DE  
NUNNO, *Riv. di Patol. nerv. e ment.*, 1914, xix., p. 351.

THE writer carried out three series of experiments on guinea-pigs with cultures of the *Micrococcus melitensis*. 1. Subdural injections of cultures of a low virulence. 2. Intravenous injections of similar cultures. 3. Subdural injections of sterilised cultures.

His conclusions were as follows:—

1. Subdural injections of a large quantity of micrococci produced considerable changes both in the vessels and in the nerve cells. The vascular lesions consisted in diffuse hyperæmia, degeneration of the vessel walls, occasional detachment of the intima, and considerable leucocytic infiltration, with a few plasma cells in the adventitia. The blood showed marked leucopenia, and in some cases formation of thrombi. The nervous changes consisted in a reduction in the number of cells, and considerable changes in those remaining, *e.g.*, chromatolysis, leucocytic infiltration, pyknosis, &c. The neuroglia was almost unaffected.

The lesions were most developed in the brain and bulb, less so in the cord and absent in the cerebellum and peripheral nerves.

2. Intravenous injection of a quantity of micrococci almost double that used for the subdural injections, produced the same results, with this difference that the changes were more marked in the bulb and spinal cord, and the peripheral nerves showed severe degenerative neuritis. The cerebellum was unaffected.

3. Subdural injection of sterilised cultures (endotoxins) produced the same results as injection of living cultures, with this

difference that the changes were a little more marked in the side corresponding to the injection. In these cases also the cerebellum was almost entirely unaffected.

J. D. ROLLESTON.

**MALIGNANT SYMPATHICUS TUMOUR OF THE RIGHT SUPRA-  
(171) RENAL.** DANIEL J. GLOMSET, *Archives Internal Med.*, 1915, xv.,  
March, p. 342.

A CHILD, aged 2 years, was admitted to hospital on account of an abdominal swelling of four weeks' duration. A median incision showed a tumour about the size of a child's head occupying the right abdominal cavity below the liver. Inoperable sarcoma of the right kidney was diagnosed and the wound closed.

At the autopsy the tumour was found to be soft, surrounded by a thick connective tissue capsule and united to the upper pole of the right kidney. The right suprarenal could not be found. On section the great bulk of the new growth was seen to be composed of rosettes or cells arranged concentrically round fibrillar centres. The cells are rich in chromatin. The cytoplasm surrounds the nucleus as a delicate thin zone, massed at the centrally directed end of the cell so as to form a sort of short stalk from which one or more fibrillæ run to lose themselves in the central fibrillar structure of the rosette. The fibrillæ do not stain with Mallory's connective tissue stain nor with Weigert's neuroglia stain. With the Bielchowsky stain the centre of the rosettes takes a brownish tinge.

It was definitely malignant, as it had invaded the suprarenal cortex, formed nodules outside the capsule and infiltrated the connective tissue of the liver. It had had both a blood and a lymphatic spread and secondary metastases were found in the lymph nodes, but especially in the medullary substance of all the long bones in the body. The lungs were free.

This type of growth apparently occurs only in young children, the oldest reported case being 7 years of age, a point which is considered to favour strongly their congenital origin. There is no doubt that it had arisen from the medulla of the suprarenal, and that it contained nervous remnants. It is not a sarcoma, carcinoma, nor is it a lymphosarcoma. It is nervous in origin, and its importance is found in the fact that the medullary portion of the suprarenals is of nervous origin, the same group of cells which give rise to the sympathetic nerve cells also giving rise to the suprarenal medulla. This tumour has many similarities with neuro-epitheliomas and neurogliomas of the retina.

A. NINIAN BRUCE.

## CLINICAL NEUROLOGY

**SEMEIOLOGICAL VALUE OF CONTINUOUS EXTENSION OF**  
 (172) **THE HALLUX.** (*Valore semeiologico dell' estensione continua dell' alluce.*) C. PASTINE, *Riv. di Patol. nerv. e ment.*, 1914, xix., p. 501.

PASTINE had previously shown that in some cases of organic epilepsy, senile paraparesis, infantile spastic paralysis, general paralysis and hemiparesis of cerebral origin, spontaneous extension of the hallux had a special semeiological value because of the absence of a true Babinski's sign, at least in the early and mild stages of these affections. He has since observed the same phenomenon in other cases of the same kind, viz., two cases of incipient multiple sclerosis, in a case of transitory hemiparesis probably due to air embolism from artificial pneumothorax, and in numerous cases of advanced pulmonary tuberculosis. In these cases stimulation of the soles provokes almost constantly a flexor response with or without retraction of the foot and leg. In some cases the plantar reflex appears abolished, in others the hallux is extended or hyperextended. Although Babinski's sign is very rare in these cases, other signs indicate that the pyramidal tracts are affected, or are in a state of continual irritation, viz., contralateral flexion of the toes, contralateral adductor reflex, slight muscular hypertonus, especially in the lower limbs, exaggeration of the tendon reflexes and diminution of the cutaneous reflexes in most cases, and in a few ankle clonus. J. D. ROLLESTON.

**THE PHENOMENON OF THE EXTENSION OF THE FINGERS,**  
 (173) **NORMAL AND PATHOLOGICAL.** (*Le phénomène de l'extension des doigts normal et pathologique.*) C. PASTINE, *Rev. Neurol.*, 1913, xxi., p. 289 (3 figs.).

THE "finger phenomenon" consists of extension of all the fingers, or of the thumb and index, when pressure is produced by the observer's thumb against the pisiform bone. According to Gordon, this sign is found only in cases of paralysis of cerebral origin and never in hysteria nor in healthy subjects. Pastine here records that he found it constantly present in normal individuals.

A. NINIAN BRUCE.

**THREE MEMBERS OF ONE FAMILY SUFFERING FROM**  
 (174) **MYOTONIA HYPERTROPHICA — THE HYPERTROPHIC FORM OF THOMSEN'S DISEASE.** ARTHUR F. HERTZ, *Proc. Roy. Soc. Med.*, 1914, vii., June (Clin. Sect.), p. 139 (8 figs.).

THE father and mother were normal, but the eldest son, aged 25, the eldest daughter, aged 18, and the youngest son, aged 13, were

all affected. A fourth son, who was drowned at the age of 18, was also "very slow" in his muscular movements. The generalised muscular hypertrophy is illustrated in each case. All showed a well-marked myotonic action (normal contraction with very slow relaxation) on voluntary contraction. A. NINIAN BRUCE.

**THE OPERATIVE TREATMENT OF BULLET WOUNDS INVOLVING THE VERTEBRAL CANAL AND ASSOCIATED WITH COMPLETE PARALYSIS.** L. J. J. MUSKENS, *Lancet*, 1915, clxxxviii., Feb. 20, p. 369.

THE author performed laminectomy upon two cases in Antwerp where the symptoms suggested complete severance of the spinal cord. Although both cases displayed an almost complete loss of all reflexes and complete flaccid paraplegia, in each case the cord and dura mater were found intact. The symptoms were thus considered to be due to intradural hæmorrhage. The following conclusions are drawn:—

1. The absence of all deep reflexes must not be taken as an absolute proof of complete rupture of the cord.
2. The rapid fluctuation in pressure caused by a passing bullet appears to be sufficient to damage seriously the blood and cerebro-spinal fluid circulation in the cord and to induce complete flaccid paraplegia. It is probable that the pressure exerted by bony splinters is of secondary importance.
3. In cases of paraplegia following on bullet wounds to the vertebral column, when there is no recovery of mobility or sensibility ten days after injury, laminectomy appears to be justified.
4. If the opening of the bony canal is not sufficient to restore pulsation in the cord the theca should be opened and the blood clot removed as thoroughly as possible. A. NINIAN BRUCE.

**SHRAPNEL WOUND OF THE SPINE, WITH EXCEPTIONALLY LOW TEMPERATURE.** M. W. B. OLIVER and F. B. WINFIELD, *Brit. Med. Journ.*, 1915, Feb. 6, p. 247.

A SOLDIER, aged 19, was hit by a shell which exploded behind him. He immediately lost the power in his legs, but did not lose consciousness. A skiagram showed a large shrapnel bullet at the level of the sixth cervical spine, in the middle line, with fracture of the laminae of this and the spinous processes and laminae of the fourth and fifth cervical vertebrae. Both arms showed flaccid paralysis, the legs could be drawn up and extended, and respiration was diaphragmatic. Prick lost to C<sub>3</sub> on the left



side, and to C<sub>4</sub> on the right. Both knee jerks and ankle jerks were absent, and both plantar reflexes were extensor.

The temperature recorded on two low registering thermometers was 80·4° F. and 80·6° F. It rose rapidly to 105·6° F. before death.

At the autopsy, the cord in the region of the fracture appeared somewhat swollen and softened, and there was some hæmorrhage into the central canal. Apart from this, nothing abnormal was found.

A. NINIAN BRUCE.

**ON A CASE OF SUDDEN PARAPLEGIA AND LATENT POTT'S (177) DISEASE.** (*Sopra un caso di paraplegia improvvisa e morbo di Pott latente.*) C. PASTINE, *Riv. di Patol. nerv. e ment.*, 1914, xix., p. 529.

A WOMAN, aged 43, who had hitherto had no pain nor any nervous disturbance, suddenly developed spastic paraplegia on getting up in the morning. In a few weeks the spasticity gradually disappeared, and was replaced by a flaccid paraplegia which persisted until death from decubitus. Post mortem a large bag of pus was found over the bodies of the upper five dorsal vertebræ, which were carious. The intervertebral disc between the third and fourth vertebræ was much affected, and a dislocation had probably taken place at this point.

The cord showed all the signs of softening.

J. D. ROLLESTON.

**PAINFUL CRURAL MONOPLÉGIA WITH CONTRACTURE IN (178) FLEXION AND ANÆSTHESIA OF RADICULAR DISTRIBUTION. CLINICAL DIAGNOSIS: COMPRESSION OF THE FOURTH LUMBAR ROOT BY SPINAL PACHYMEINGITIS SECONDARY TO A NEOPLASM OF THE UTERUS. AUTOPSY: A NEURITIS OF THE CRURAL WHICH WAS INVOLVED BY A LARGE LATENT CANCER OF THE CÆCUM.** (*Monoplégie crurale douloureuse en flexion avec anesthésie d'apparence radiculaire. Diagnostic clinique: compression de la iv<sup>e</sup> racine lombaire, par pachyméningite rachidienne secondaire à un néoplasme utérin. Autopsie: névrite du crural englobé par un volumineux cancer latent du cæcum.*) G. RAUZIER and H. ROGER, *Rev. Neurol.*, 1913, xxi., p. 445.

A WOMAN, aged 62, developed extreme pain in the right lower limb and lower part of the vertebral column. The right knee jerk was absent, the right Achilles jerk was present, and Babinski's sign was negative. Muscular atrophy was present in the right

thigh, and there was a band of hypæsthesia on the anterior surface of the thigh, and extending downwards to the upper part of the internal surface of the leg. The cerebro-spinal fluid was normal, and an X-ray showed nothing unusual. Metrorrhagia had been present for five years, and a diagnosis was made of compression of the fourth lumbar root by pachymeningitis secondary to a uterine tumour. She became very emaciated, and after death an epithelioma of the uterus and ovaries was found, but the involvement of the crural nerve was secondary to a glandular epithelioma of the cæcum.

A. NINIAN BRUCE.

**CASE OF DIFFUSE SARCOMATOSIS OF THE BRAIN AND (179) SPINAL CORD.** LEONARD PARSONS, *Proc. Roy. Soc. Med.*, 1913, vi., April (Sect. Study Dis. in Child.), p. 168.

A CHILD, aged 2 years, presented the following symptoms which lasted four months; headache, attacks of violent screaming, and failure of vision passing into double optic neuritis and blindness. Hearing, speech and intelligence were normal until after the onset of the final pressure symptoms, which commenced some ten days before death.

On the basal surface of the brain and scattered indiscriminately over this surface of the cerebrum, pons, medulla and cerebellum, many small growths were found attached to the pia arachnoid. Many of the cranial nerves showed an investment of tumour growth, and the optic chiasma and stalk of the infundibulum were so covered. A large mass was found in the cerebellum: it had infiltrated the lateral lobes and distended and filled the fourth ventricle. The iter was completely blocked. The cord was entirely ensheathed by the growth, which consisted chiefly in an infiltration of the pia. It was most abundant in the lumbar region and on the posterior surface of the cord. Microscopically it proved to be a small round-celled sarcoma, and had infiltrated, compressed and distorted the cord. The primary growth appears to have been the cerebellum, and the dissemination along the spinal cord and various cranial and spinal nerves was due to an "infected" cerebro-spinal fluid (*cf. Review*, 1905, iii., p. 478).

A. NINIAN BRUCE.

**EVOLUTION OF PUPILLARY DISTURBANCES IN TABES.** (De (180) l'évolution des troubles pupillaires chez les tabétiques à la période d'état.) A. ROCHON - DUVIGNEAUD and JEAN HEITZ, *Rev. Neurol.*, 1913, xxi., p. 151.

In 1903 the authors published their findings in 77 cases of tabes with regard to the condition of the pupils. In 1910 they were

again able to examine the pupils of 16 of these cases under the same conditions as before, and they here record in full the condition found on each occasion. None of the cases had received any active treatment during the intervening seven years.

They found that the tendency is for the diameter of the pupils to increase slightly, especially in cases with optic atrophy. When irregularity of the pupil is present it tends to remain constant, and appears to be only produced during the initial period of development. When the light reflex has not been lost during the initial period, it also tends to persist indefinitely, and the same is true of the reaction to convergence, which remains even in cases with marked optic atrophy. A. NINIAN BRUCE.

**CEREBRAL EMBOLISM IN DIPHTHERIA.** J. D. ROLLESTON, *Proc. (181) Roy. Soc. Med.*, 1915, viii., Jan. (Sect. Study Dis. Child.), p. 33.

A GIRL, aged 8 years, developed flaccid paralysis of both upper limbs and left lower limb, with occasional convulsive movements of both upper limbs and more or less persistent rigidity of the right lower limb about the seventeenth day of diphtheria. At the autopsy an embolism of the basilar artery, of the superior cerebellar arteries, and to a greater or less extent of all the arteries entering into the formation of the circle of Willis, was found. An infarct was present in the kidney.

A. NINIAN BRUCE.

**PERFORATING WOUND OF THE SKULL IN THE OCCIPITAL (182) REGION. POLYURIA, DYSPHAGIA, TACHYCARDIA, AND CERVICAL ZOSTER. RECOVERY.** (Plaie perforante du crâne dans la région occipitale. Polyurie, dysphagie, tachycardie et zona cervical. Guérison). J. DUPONT and J. J. TROISIER, *Bull. et mém. Soc. méd. Hôp. de Paris*, 1915, xxxix., p. 21.

A SOLDIER was shot through the head by a rifle bullet on 30th October. When seen by the writers on 4th November, in addition to the symptoms enumerated above, he had a cerebellar gait and complained of vertigo, and both external recti were paralysed. The symptoms persisted for a fortnight, and then improvement gradually set in, first in the gait, and then in the dysphagia and tachycardia. The tachycardia, at first continuous, became paroxysmal. After the middle of December the polyuria and ocular palsy disappeared.

The bullet had traversed the left occipital lobe, the occipital cornu of the lateral ventricle, the vermis superior, and upper surface of the right lobe of the cerebellum. In spite of its

passage through the cerebellum and cerebrum, the cerebral and cerebellar disturbance was minimal, while, on the other hand, the grey substance of the floor of the third ventricle, the bulbar nerves, and even the ganglion of the cervical cord, were most affected. The lesions in these areas were probably hæmorrhagic. No lumbar puncture was performed, owing to the danger of more or less sudden decompression. J. D. ROLLESTON.

**A CASE OF ACUTE SUPPURATIVE OTITIS MEDIA, PURULENT (183) LABYRINTHITIS AND LEPTOMENINGITIS WITHOUT RUPTURE OF THE TYMPANIC MEMBRANE. J. S. FRASER, *Edin. Med. Journ.*, 1914, xii., May, p. 417 (12 figs.).**

A CASE is recorded in a boy, aged 12 years, who suddenly developed severe earache and slight frontal headache. He was put to bed, vomited and showed choreic movements of the hands, but soon became semi-comatose and died. Lumbar puncture gave issue to a milky fluid under tension, containing polymorphs and organisms later found to be the *Streptococcus mucosus*. There had been no discharge from the ear at any time.

At the post mortem it was found that the case was one of acute infection of the respiratory tract and of the middle ear clefts of both sides. The pus in the tympanic cavity had penetrated into the labyrinth through the round and oval windows and from the labyrinth along the perilymphatic aqueduct to the subarachnoid space, giving rise to meningitis before the purulent exudate in the tympanic cavity had burst through the tympanic membrane. The present case appears to be the first in which these conditions have been proved to be present by microscopic examination.

The illustrations are very good.

A. NINIAN BRUCE.

**CASE OF CHRONIC PRIMARY PNEUMOCOCCAL CEREBRO- (184) SPINAL MENINGITIS. CHARLES KERR, *Edin. Med. Journ.*, 1914, xiii., July, p. 55.**

THE patient was an unmarried woman, aged 41, who developed a feeling of lassitude and occasional backache in June 1913. There was no previous history of any illness. She grew gradually worse, and a diagnosis of typhoid was made, but the temperature was not typical, and she became very deaf. On 7th November she became suddenly delirious, the Widal reaction was found to be negative, and a distinct leucocytosis was present. On 9th January,

10 c.c. of cerebro-spinal fluid were withdrawn; it was under tension but clear. On staining a film, polymorph leucocytes and pneumococci were found, and a diagnosis of pneumococcal meningitis was then made. 10 minims of a pneumococcal vaccine seemed to do harm. Bed-sores, headache, stiffness of the neck, pain on moving the limbs, and a positive Kernig's sign developed, and death took place on 31st January. There was no autopsy. The illness thus lasted seven and a half months.

A. NINIAN BRUCE.

**A BENIGN CASE OF PRIMARY PNEUMOCOCCAL MENINGITIS.**

(185) (*Sur un cas bénin de méningite à pneumocoques cliniquement primitive.*) R. DUCASTAING, *Rev. Neurol.*, 1913, xxi., p. 361.

A MAN developed suddenly during the night headache and extreme lassitude, followed next evening by vomiting, lumbar pain, rapid and dichrotic pulse, rigidity of the neck, and Kernig's sign. These completely passed off after four days, when an attack of herpes occurred on the lower lip. Lumbar puncture gave issue to a fluid which contained a little albumen, a few cells, and numerous diplococci, which, on culture, proved to be pneumococci.

No other pneumococcal focus could be found anywhere, the heart and lungs being clear. Since the age of 10, however, the patient had suffered from frequent attacks of headache, vomiting, and occasionally herpes. The resemblance of the case to pneumonia in sudden onset, presence of herpes labialis, and seven days' duration, is interesting.

A. NINIAN BRUCE.

**A CASE OF BILATERAL TEMPORO-SPHENOIDAL ABSCESS IN**

(186) **A GIRL, AGED 16; OPERATIONS; RECOVERY.** H. J. DAVIS, *Proc. Roy. Soc. Med.*, 1913, vi., June (Otol. Sect.), p. 102; *ibid.*, 1914, vii., June (Otol. Sect.), p. 69.

THE first operation was in 1913, when 3 drachms of pus were removed from a right temporo-sphenoidal abscess following mastoid disease and aural polypus.

The second operation was in 1914, when the same condition developed on the left side, namely, earache, vomiting, and vertigo, and an aural polypus was seen protruding from the meatus. A large temporo-sphenoidal abscess was drained, but purulent spinal meningitis followed, with pus and streptococci in the cerebro-spinal fluid. An uninterrupted recovery, however, took place with intraspinal injections of antistreptococcus serum and stimulants, to the former of which the recovery is attributed. A. NINIAN BRUCE.

**ANATOMICAL STUDY OF A CASE OF HEMIANÆSTHESIA DUE (187) TO A LESION IN THE ANTERIOR PART OF THE OPTIC THALAMUS.** (*Étude anatomique d'un cas d'hémi-anesthésie avec lésion en foyer des parties antérieures de la couche optique.*)  
L. BÉRIEL, *Rev. Neurol.*, 1913, xxi., p. 6.

A WOMAN, aged 80 years, developed right hemiparesis, with hemianæsthesia to touch and pain after a slight stroke. The sensory symptoms were more marked than the motor. On the third day motor aphasia developed, and death took place on the fourteenth day. Babinski's sign was negative.

At the autopsy a hæmorrhagic lesion was found exclusively in the anterior part of the optic thalamus. This has been carefully reproduced in two figures, showing that the internal capsule was not involved. A general hæmorrhagic encephalitis was also discovered on microscopic examination of the basal portion of the hemisphere.

A. NINIAN BRUCE.

**THE ATONIC FORM OF CEREBRAL DIPLEGIA.** F. E. BATTEN (188) and W. H. VON WYSS, *Brit. Journ. Child. Dis.*, 1915, xii., p. 65.

THE writers record four cases in children, aged from 2 to 3 years, of this condition, first described by Foerster in 1909, by Pierce Clark in 1913 (*v. Review*, 1913, xi., p. 630), and others.

All four cases showed hypotonus of the voluntary muscles, especially of the lower limbs, and a deficiency of the synergic action of muscles as shown by inability to stand or walk, though there was no lack of power in performing active movements. One showed a marked degree of ataxy, characterised by a lack of proportion of the movements. Two had a certain amount of hypertonus, shown by adductor spasm and overflow of the abdominal reflexes, and one had an occasional extensor response. Two showed rigidity of the lower limbs, when suspended by the axillæ. Two were markedly mentally deficient and mute, like Pierce Clark's cases. Three were born as breech presentations. One showed active congenital malformation, viz., congenital dislocation of the hips.

The condition is distinguished from myatonia congenita by the normal states of the tendon reflexes and electrical reactions. The pathology of the condition is practically unknown.

J. D. ROLLESTON.

**ON DIAGNOSIS OF TUMOURS OF THE CORPUS CALLOSUM.**

(189) (*Contributo alla diagnosi dei tumori del corpo calloso.*)  
A. AGOSTA, *Riv. ital. di Neuropat., Psichiatr. ed Elettroter.*, 1915,  
viii., p. 49.

THE writer records a case of gliosarcoma of the corpus callosum in a woman, aged 52, on which he bases the following conclusions:—

1. Tumours localised to the corpus callosum show a predominance of psychical symptoms from the first; the general signs of an intracranial tumour are rare and the somatic changes are slight.

2. The hypothesis of a tumour of the corpus callosum should be discussed when a patient develops the following psychical changes: lack of association of ideas, eccentricity of conduct, amnesia, irritability, apathy and emotional indifference in contrast with the mental lucidity which is frequently present.

3. Left motor apraxia may be regarded as a valuable diagnostic sign if present, but its absence is of no value.

4. In the differential diagnosis general paralysis and tumours of the frontal lobe must be considered. J. D. ROLLESTON.

**ACUTE INSULAR SCLEROSIS AND ITS CONCOMITANT VISUAL**

**DISTURBANCES.** FOSTER KENNEDY, *Journ. Amer. Med. Assoc.*, 1914, lxiil., Dec. 5, pp. 2001-2005.

THE most frequent prodromal symptom of an incipient sclerotic change throughout the central nervous system is some transient disturbance of the function of vision. This may either be a passing attack of diplopia or a transient blurring of vision rarely bilateral. The former is due to involvement of one or more ocular muscles, the latter to the fact that visual acuity first takes place in those parts of the fields subserved by the most highly specialised groups of fibres, namely, the macular bundles, with the result that visual failure, in almost all cases of retro-bulbar neuritis, takes the form of a central or paracentral scotoma.

Three cases are described in which visual symptoms were marked, but where the symptom grouping and variability of progress left no doubt of the correctness of the diagnosis.

A. NINIAN BRUCE.

**THE SIGN OF NEGRO IN PERIPHERAL FACIAL PARALYSIS.**

(191) (*Sur le signe de Negro dans la paralysie faciale périphérique.*)  
ALOYSIO DE CASTRO, *Rev. Neurol.*, 1913, xxi., p. 149 (3 figs.).

If a patient suffering from this condition looks upwards as far as possible the eye on the paralysed side will be seen to rotate

higher than the eye on the normal side. This is to be regarded as a movement of compensation, and is due to an over-innervation of the superior rectus muscle. This sign was described by Negro in 1912, and is always present in the peripheral type. It is absent in facial paralysis of central origin, and thus is of value for differential diagnosis. It is also useful in cases of bilateral facial paralysis as a means of determining which side is most affected.

A. NINIAN BRUCE.

**ON APHASIA DUE TO ATROPHY OF THE CEREBRAL CON-**  
(192) **VOLUTIONS.** G. MINGAZZINI, *Brain*, 1914, xxxvi., p. 493 (13 figs.).

A PATIENT, aged 59, gradually developed the use of unusual words in ordinary conversation (paraphasia and echolalia), and he also experienced difficulty in understanding many questions. Two years later he was found to have true sensory aphasia, associated with paralexia and almost complete agraphia. Gradually dementia showed itself, accompanied by symptoms of agnosia. Later, there was complete word deafness, alexia, and agraphia: voluntary speech was almost entirely absent: finally, agnostic apraxia was noted. The post mortem revealed severe atrophy of the prefrontal and temporal gyri, the left side being the most affected, while histological examination showed severe alterations in the nerve cells and medullated fibres of the gyri belonging to the Broca region, in the wide sense, and to the first temporal gyrus, these changes being greatest on the left side.

The paper contains detailed references to analogous cases, and also a valuable discussion of the relation of the aphasia and dementia to each other, and of both to the pathological findings in the case.

S. A. K. WILSON.

**DO THERE EXIST, PROPERLY SPEAKING, MOTOR IMAGES OF**  
(193) **ARTICULATION?** (*Existe-t-il a proprement parler des images*  
*motrices d'articulation?*) J. FROMENT and O. MONOD, *Rev.*  
*Neurol.*, 1913, xxi., p. 197.

THE motor image of articulation is not a fact of psychological observation, as are the auditory and visual images. It is an hypothesis contrary to data of auto-observation, and is not necessary to explain the mechanism of articulate language. Articulation, like writing, is conditioned by simple motor habits. These habits are brought into action directly, and without the intervention of any conscious memory, by the sensory images with which they are regularly associated. The motor articulatory habit is brought into action by the auditory image, just as the



motor writing habit is brought into action by the corresponding visual image. Volition only intervenes to permit or to inhibit these automatic motor acts by which the sensory images tend to express themselves.

A. NINIAN BRUCE.

**THE PHENOMENON OF "TONIC INNERVATION" AND ITS  
(194) RELATION TO MOTOR APRAXIA.** S. A. K. WILSON and  
F. M. R. WALSH, *Brain*, 1914, xxxvii., p. 199.

IN this paper the writers describe three cases of cerebral lesion in which the most striking clinical feature, common to all three, was the patients' inability to relax a given innervation in one or other muscle group: it so happened that in each case it was the arm muscles, on one side, which showed the phenomenon.

Tonic innervation may occur by itself, *i.e.*, without apraxia or dyspraxia. The lesion in each case was in the neighbourhood of the intermedio-precentral region of the frontal lobe and the adjacent root of the corpus callosum in the centrum semi-ovale. The phenomenon was unilateral, and in the arm opposite to the lesion. In each case it was associated with slight but definite involvement of the cortico-spinal path, with slight spasticity of the affected limbs. The greater the involvement of the pyramidal path, the less marked was the tonic innervation. After operation (two of the cases were cerebral tumour cases) the tonic innervation disappeared with the development of a post-operative hemiplegia.

The symptom occurs solely during voluntary innervation of the muscular groups concerned. In involuntary movements it was not observable.

Some five or six similar cases from the literature are described in the paper, and after a discussion of the relation of the phenomenon to perseveration, and to myotonus, the writers bring forward evidence to suggest that tonic innervation is associated with impairment of function of cortico-spinal neurones at their cortical end: either the activity of the affected motor centres is directly interfered with, or, more likely, the stimuli reaching them by short transcortical paths from the psychomotor area of the frontal lobe are interfered with.

AUTHORS' ABSTRACT.

**DYSSYNERGIA CEREBELLARIS PROGRESSIVA—A CHRONIC  
(195) PROGRESSIVE FORM OF CEREBELLAR TREMOR.** RAMSAY  
HUNT, *Brain*, 1914, xxxvi., p. 247.

THIS is a clinical paper, from a study of the three cases described, in which the author concludes: there exists a chronic progressive form of cerebellar tremor, the most striking and characteristic

symptom of which is a generalised volitional tremor which begins locally and gradually progresses. The classical symptoms of cerebellar defect of function—hypermetria, dysmetria, adiadokokinesis, dyssynergia, hypotonia, and intermittent asthenia—are also present. It is suggested that the basis of the condition is a progressive degeneration of certain special structures of the cerebellar mechanism presiding over the control and regulation of muscle movements.

S. A. K. WILSON.

**FURTHER NOTE ON A CASE OF DYSPITUITARISM.** A. W. (196) FALCONER, *Edin. Med. Journ.*, 1914, xiii, Sept., p. 246.

THIS case has already been referred to (*v. Review*, 1914, xii, p. 40), and was that of a girl aged 16½, who presented a striking contrast to the usual adiposo-genital dystrophy of Fröhlich in the presence of marked emaciation and diminished carbohydrate tolerance. She was treated irregularly with hydrarg. c. creta and pituitary tablets, and gradually became adipose, while the carbohydrate tolerance increased. The exact parallelism between these two suggests that the previous emaciation was due to a functional over-activity of the posterior lobe of the pituitary gland, now succeeded by a diminished functional activity.

A. NINIAN BRUCE.

**CASE OF BILATERAL TEMPORARY HEMIANOPIA; RAPID (197) AND PERMANENT RECOVERY OF VISION AFTER THE ADMINISTRATION OF THYROID EXTRACT.** H. L. EASON, *Proc. Roy. Soc. Med.*, 1915, viii, Jan. (Ophthalmol. Sect.), p. 32.

A MAN, practically blind, recovered normal vision and nearly a full field in the right eye after only a month's treatment with extract of thyroid gland. Five years later he returned with a bilateral hemianopia. A skiagram showed a slightly enlarged sella turcica, deeper than usual. Small doses of thyroid from time to time prevented the headache and failure of vision, which return if the thyroid be dispensed with too long.

A. NINIAN BRUCE.

**GLUTEAL AND CRURAL TYPES OF FIBROSITIS: THEIR (198) RELATIONSHIP TO SPURIOUS AND GENUINE SOLITARIA.** L. J. LLEWELLYN and A. B. JONES, *Edin. Med. Journ.*, 1914, xiii, Sept., p. 225.

THE writers point out that although all the gluteal muscles are liable to fibrositis, the morbid process is especially prone to develop in the sheaths or substance of the gluteus medius. It is almost always the result of exposure or dampness and is generally

gradual and insidious in origin. Similar inflammatory deposits are also liable to develop in certain of the thigh and leg muscles and may in the same way produce local and referred pains which may be mistaken for true sciatica. In attempting to diagnose the spurious sciatic pains of gluteal or crural fibrositis from true sciatica, the following points are of value: (1) the pain is not referred to the nerve, but to the muscular and fascial structures, (2) the nerve trunk is not tender, (3) the pain is less radiating and a more diffuse feeling of stiffness is felt, referred to the fibrous attachments of the affected muscles, (4) the pain is less severe but more constant and lacks the tendency to paroxysmal exacerbation so typical of true sciatic neuralgia, (5) the pain is evoked or aggravated by the particular movement subserved by the affected muscle, (6) nodules may be detected in the muscle or fascia. The condition is *myogenous* and not neurogenous, but if not promptly treated may involve the nerve sheath and cause genuine sciatica.

A. NINIAN BRUCE.

**NEURASTHENIA.** JAMES RITCHIE, *Edin. Med. Journ.*, 1914, xii., (199) Feb., p. 113.

NEURASTHENIA is characterised by "great fatiguability of the nerve centres; there is no reserve of nervous energy; the power of recuperation is poor; the various organic functions are sluggish; the patient has the will to work, but cannot; there is no liability to nervous explosions, no evidence of mental aberration, and there are none of the signs of any of the system diseases of the nerve centres." The symptoms vary in accordance with the functions of the neurones involved. The condition may be congenital, *i.e.*, the nerve centres may be so weak as to give way in school life, or acquired, the most common condition. When traumatic it is due possibly to the sudden production of molecular change in the nerve centres. It has to be distinguished from post-influenzal debility, hysteria, insanity, indolence and selfishness, and malingering. The question of treatment is also discussed.

A. NINIAN BRUCE.

**ON PROGRESSIVE LENTICULAR DEGENERATION (WILSON'S (200) DISEASE).** (*Sulla degenerazione lenticolare progressiva (Malattia del Wilson).*) L. DE LISI, *Riv. di Patol. nerv. e ment.*, 1914, xix., p. 577.

THE writer gives a detailed description of this disease, and records the first case in Italian literature. The patient was a boy aged 11 years. The parents were healthy and there was no similar

case in the family, which consisted of three other sons and two sisters. The onset occurred after a fright. The first symptoms were tremors, rigidity and dysarthria. As the disease advanced contractures, dysphagia and extreme emaciation developed. The mental condition was normal, but emotionalism was exaggerated. Death took place from pneumonia nine months after the onset.

The liver and lenticular nuclei showed the typical appearances post mortem.

J. D. ROLLESTON.

**CASE OF (?) KERNIKTERUS ASSOCIATED WITH CHOREIFORM (201) MOVEMENTS.** LEONARD GUTHRIE, *Proc. Roy. Soc. Med.*, 1914, vii., March (Sect. Study Dis. of Child.), p. 86.

A CASE of a girl, aged 1 year and 7 months, who was jaundiced at birth and remained so for six weeks. She was the second surviving child of nine, five of whom were jaundiced and died within a few days of birth. She was brought to hospital on account of choreiform movements and backwardness.

It is suggested this is a case of survival of "icterus gravis neonatorum," a disease which occurs in the earliest days of life and is usually fatal in a week or two. "After death the basal central ganglia are found stained yellow, whilst the rest of the brain is only faintly tinged; the yellow areas show necrosis of the ganglion cells, which is probably the cause of their ready absorption of bile pigment." Nervous symptoms have not been described in such cases, probably because the patients have not lived long enough to exhibit them. Dr S. A. K. Wilson has drawn attention to the analogy between this condition and progressive lenticular degeneration.

A. NINIAN BRUCE.

**HYPERTROPHIC PULMONARY OSTEO-ARTHROPATHY (202) (MARIE'S DISEASE).** A. GILMOUR, *Edin. Med. Journ.*, 1914, xi., June, p. 527 (3 figs.).

A CASE in a small and emaciated boy, aged 9, with kyphosis of the spine and symmetrical enlargement of the wrists and hands. The face was small, but well formed. The fingers were markedly "clubbed." A number of measurements of the upper and lower extremities are given with a skiagram of the forearm and hand. He was kept under observation for five months when he died from an illness with all the signs of tubercular meningitis. There was no autopsy.

The disease was described by Marie in 1890, who considered it was always secondary to some chronic lung condition in which toxins were produced which had an "elective" action on certain

parts of the osseous and articular systems, producing inflammatory changes. It is distinguished from acromegaly by the non-involvement of the face and cranium.

A. NINIAN BRUCE.

**PROGRESSIVE VERTEBRAL ANKYLOSIS.** (*Spondylose rhizomélisque*.) *Proc. Roy. Soc. Med.*, 1914, vii., June (Clin. Sect.), p. 143.

A CASE in a man, aged 67, in whom the whole of the vertebral column and the cranio-vertebral articulation appeared to be ankylosed in a position of kyphosis. The ribs did not move with respiration, which was altogether diaphragmatic. A skiagram showed that all the bodies of the vertebræ were united by a layer of bone at their anterior margins. There was great muscular rigidity or hypertonicity as if to shield the joints from "jarring" movements (*v. Review*, 1911, ix., p. 457). Dr Hertz mentions a case which seems to show that encouraging the patient to move is not good. A man, aged 22, began to suffer from pain in his left shoulder. His neck was then affected, and later the spine. An X-ray showed no bony ankylosis, the rigidity being entirely due to muscular spasm. As the spasm seemed protective in origin, complete fixation of the affected joints in a plaster bed was tried with very good results.

A. NINIAN BRUCE.

**NERVOUS CRETINISM.** R. M'CARRISON, *Proc. Roy. Soc. Med.*, 1914, (204) vii., June (Sect. Study Dis. of Child.), p. 157.

THE symptoms of this type of cretinism are a combination of congenital myxœdema with congenital cerebral diplegia. In some cases the myxœdematous symptoms predominate, in others the diplegic. The nervous symptoms may vary from the slightest degrees of paraplegia to the most intense grades of spasticity, athetosis, fits, and idiocy. Nystagmus may be present, and squint is common. The proof that these nervous symptoms are due to thyro-parathyroid defect is (1) that the thyroid gland is atrophied, and (2) that the condition is greatly benefited by the administration of thyroid gland by the mouth. Defective thyroid function in the mother is the essential factor in the production of cretinism in the child, with the possible addition of toxins absorbed from the alimentary canal.

A. NINIAN BRUCE.

**CONGENITAL DEFECT, SIXTH AND SEVENTH CRANIAL NERVES.** E. BELLINGHAM SMITH, *Proc. Roy. Soc. Med.*, 1914, vii., June (Sect. Study Dis. of Child.), p. 149.

A BOY, aged 3 years, showed complete right facial paralysis with right external rectus paralysis. The defect had been noticed since

the second week of life. It was considered that these cases may be best explained as the result of aplasia of the nerve nuclei.

A. NINIAN BRUCE.

**THE ELECTRICAL TESTING OF MUSCLE AND NERVE, WITH  
(206) SPECIAL REFERENCE TO THE NEW METHOD IN WHICH  
CONDENSERS ARE USED.** E. P. CUMBERBATCH, *Proc. Roy.  
Soc. Med.*, 1914, vii., March (Electro-Ther. Sect.), p. 38.

"INDUCTION coils are unsuitable for the stimulation of muscle and nerve. Most medical nerve coils give discharges which are not brief enough to reveal the slighter degrees of degeneration, whilst the complex form of the waves of discharge, varying in different coils, introduces unnecessary complications. Further, the intensity of the discharge is not easily measured.

"It is often difficult to tell whether the response of a muscle to the galvanic current is quick or slow. The measurement of the duration of flow of this current is not made, though if this is done several degrees of degeneration will be made out.

"By the use of condensers electrical stimuli are standardised and measured both in intensity and duration.

"Condenser discharges cause much less pain, and enable the recognition of many different degrees of degeneration, which may prove to be of value in diagnosis and prognosis."

A. NINIAN BRUCE.

**ON A NEW REACTION IN THE CEREBRO-SPINAL FLUID. (Di  
(207) una nuova reazione del liquido cefalo-rachidiano.)** P. BOVERI,  
*Riv. di Patol. nerv. e ment.*, 1914, xix., p. 280.

THE reaction is performed as follows:—

Pour 1 c.c. of the cerebro-spinal fluid into a small test tube, add slowly 1 c.c. of a 1 in 100 solution of potassium permanganate, pouring it down the sides of the tube, and then note the coloration of the boundary zone between the permanganate solution and the cerebro-spinal fluid. If the latter is normal, there is no coloration, while in pathological cases the boundary zone turns more or less yellow. This *zonal* reaction is not so clear as the *global* reaction in which, after the test tube has been slightly shaken so as to mix the two fluids, a complete change takes place in the colour of the mixture. The violet-red colour of potassium permanganate disappears if the cerebro-spinal fluid is pathological, and the mixture assumes a straw-yellow or canary-yellow tint. If, on the other hand, the cerebro-spinal fluid is normal, the colour remains violet-red.

The reaction occurs very quickly, and its value is related to

the rapidity of its production. *Strong* reaction occurs when it takes place in less than two minutes, a *moderate* reaction if in three or four minutes, and a *weak* reaction if in five or six minutes. After this time limit the reaction is to be regarded as negative, as, after a certain time, even in normal cases, the mixture changes colour.

Boveri has tested the reaction in about forty cases, and comes to the following conclusions:—

1. The reaction is a sure sign of a change in the character of the cerebro-spinal fluid, and is much more sensitive than the other reactions employed (Nonne, Noguchi).

2. Whenever the quantity of albumin in the cerebro-spinal fluid is increased (positive Nonne and Noguchi reactions) the permanganate reaction is positive. The parallelism, however, is not absolute, as the former two reactions may be negative, and the latter positive.

3. The permanganate reaction does not usually show a parallelism with cerebro-spinal lymphocytosis. Sometimes a feebler reaction is seen with a well-marked lymphocytosis.

4. The best marked reactions are seen in cases of myelitis.

The pathogeny of the reaction is obscure.

J. D. ROLLESTON.

**A NOTE ON CERTAIN PECULIAR CRYSTALS FOUND IN THE**  
(306) **CEREBRO-SPINAL FLUID FROM A CASE OF SEPTIC**  
**MENINGITIS.** W. W. D. THOMSON, *Lancet*, 1915, clxxxviii,  
March 27, p. 653.

THE case is that of a girl, aged 18, who developed septic meningitis following chronic otitis media. There was no autopsy. The cerebro-spinal fluid, obtained during life, yielded polymorph pus cells and curious crystals which were colourless and transparent, strongly double refracting, and belonging probably to the rhombic system. They were soluble in dilute organic and inorganic acids, in alkalies, and in acid spirit, but insoluble in alcohol, ether, chloroform, acetone, or boiling water. Microchemically they did not seem to be derivatives of phosphoric acid or choline.

On culture, a growth of staphylococcus and of a gram-positive streptothrix were found.

A. NINIAN BRUCE.

**THE WASSERMANN REACTION IN OPHTHALMIC PRACTICE:**  
(209) **A RECORD OF 250 CASES.** W. H. MANSON, T. J. MACKIE, and  
H. EDGAR SMITH, *Brit. Med. Journ.*, 1915, Feb. 20, p. 324.

THE method used was the lecithin-cholesterin method of Browning and Mackenzie. Excluding such conditions as ocular injuries,

conjunctivitis, cataract, and ordinary errors of refraction, all other ocular affections without selection, when analysed on the basis of the Wassermann reaction, give a positive result in about 50 per cent. of cases. This is probably an underestimate of the proportion of syphilitic cases, as many eye lesions occur in tertiary and latent syphilis when the reaction is negative. In interstitial keratitis the reaction was positive in 88·8 per cent.

A. NINIAN BRUCE.

**THE CLINICAL ASPECTS OF SYPHILIS OF THE NERVOUS  
(210) SYSTEM IN THE LIGHT OF THE WASSERMANN RE-  
ACTION AND TREATMENT WITH NEOSALVARSAN.**

HENRY HEAD and E. G. FEARNSIDES, *Brain*, 1914, xxxvii., p. 1.

(The substance of this work was given in the Schorstein Memorial Lectures, delivered at the London Hospital on March 19 and 26, 1914.)

THIS paper is the third of a trilogy setting forth the results of work carried on by the authors in conjunction with Dr Fildes and Dr M'Intosh, on the behaviour of the Wassermann reaction in diseases of the central nervous system of syphilitic origin.

It deals with the clinical aspect, classification, prognosis, and treatment of such diseases.

In the introduction, attention is drawn to the chaos which has prevailed in regard to the nomenclature of syphilitic affections of the nervous system, owing to the misconception implied in the use of the term "parasyphilis." The discovery by Noguchi of the *Spirochaeta pallida* in the brain of patients who had died from dementia paralytica, showed that this condition, tabo-paresis, and tabes dorsalis are not different "diseases," but due to an identical pathological process attacking different parts of the central nervous system.

Fournier's contention that "parasyphilis" was a condition which required syphilis as an antecedent, but was not itself an active manifestation of the syphilitic virus, fell to the ground when the *Spirochaeta pallida* was demonstrated in the brain of general paralytics.

Moreover, the insusceptibility of "parasyphilis" to remedies such as salvarsan and neosalvarsan was shown by M'Intosh and Fildes not to be due to a difference in the pathological processes at work, but to the fact that the virus was active in parts that are not reached by the drugs in effective doses.

In *parasyphilis* the virus lies deeply in the substance of the central nervous system; in other forms of chronic syphilis of the nervous system, the vessels and meninges are affected. These



are easily reached by a drug circulating in the blood, whereas the neuroglia and essential nerve structures are not so.

The writers therefore propose to divide cases of syphilitic disease of the central nervous system into those of *syphilis meningo-vascularis* and *syphilis centralis*.

The latter term is chosen to include all those cases in which the degeneration of nerve tracts or nuclei shows that the lesion must lie within the structure of the nervous system itself. This category includes "parasyphilis," used in the strict sense for those forms of the disease which are not materially influenced by our present methods of antisiphilitic treatment.

They prefer the name *syphilis centralis* to that of *parenchymatous syphilis*, because the latter may convey the erroneous idea that the nerve elements alone and not also the neuroglia react to the toxic action of the spirochaetes.

In both *syphilis centralis* and *syphilis meningo-vascularis*, hypersensitiveness of the structures involved must be assumed in consequence of previous sensitisation of the tissues during previous stages of the infection. For, just as the reaction which we call a gumma is out of all proportion to the number of spirochaetes that can be discovered within it; so it may be suspected that "the difference between the clinical course of cases of 'parasyphilis' and of the acuter forms of cerebro-spinal syphilis, lies in the extent to which the central nervous system has become hypersensitive."

In regard to diagnosis, it may be quite impossible in many cases to distinguish between syphilitic encephalitis and dementia paralytica, without observing the effect of treatment and the changes it produces in the Wassermann reaction. In the same way syphilitic meningo-myelitis may simulate tabes dorsalis or amyotrophic lateral sclerosis.

Yet it is of chief importance to diagnose the site of the lesion and hence to foretell the probable behaviour of the disease, and the authors claim that these objects may be achieved by reconsideration of the clinical signs and symptoms, aided by the Wassermann reaction.

If, for instance, there are signs of an affection of a series of posterior nerve roots, some meningitis must be present, and in the same way sudden hemiplegia signifies in most cases vascular disease. Loss of sense of posture, and of the appreciation of the vibrating tuning fork and of the compass test; absence of knee and ankle jerks, with or without ataxy, indicate destruction of the posterior columns.

When rapid improvement, not only in symptoms and signs, but also in the Wassermann reaction in the cerebro-spinal fluid, occurs after intravenous injection of neosalvarsan or allied drugs,

we can be certain that the lesion is situated in parts such as the meninges and vessels easily reached by drugs circulating in the blood. On the other hand, absence of improvement in the clinical condition, accompanied by a positive Wassermann reaction in the cerebro-spinal fluid, unchanged over months or years, points to an affection of the deeper structures of the nervous system which are not reached effectively by the arsenical compounds employed according to present methods. "But," the authors state, "a new drug capable of penetrating to the essential structures of the nervous system may render syphilis centralis amenable to treatment, and our categories will at once cease to have their present value."

*A History of Infection* in definite cases of syphilis of the nervous system is not always obtainable. In women we must often rest satisfied with a positive Wassermann reaction and a history of illness or a series of miscarriages—10 per cent. of males all demonstrably suffering from syphilis of the nervous system denied all venereal disease.

In such cases of "syphilis d'emblée" the infection must have occurred without local reaction, and so wanting in virulence, or so effectively combated by the reaction of the body, that it was apparently not followed by a rash, sore throat, or fall of hair. In 17 per cent., in whom a history of gonorrhœa only was obtained, it would seem that gonorrhœal inflammation had permitted general infection by spirochaetes to occur without obvious specific local reaction.

Much stress is laid on the importance of recognising *early symptoms and signs of cerebro-spinal syphilis*. Changes in personality and aptitude for work, loss of memory, power of attention and concentration, emotionalism, untrustworthiness in social relations, uncertainty and hesitation in action are symptoms commonly attributed to neurasthenia, and their organic basis is not suspected until too late for effective treatment. Headache, shivering attacks, malaise, pupillary abnormalities; insomnia, disturbance of sleep by horrible dreams, hallucinations, and sometimes mild forms of confusional insanity; disturbances of micturition; local muscular wasting associated with paræsthesia, analgesia, and hyperæsthesia corresponding to radicular or segmental areas, are all conditions and signs of cerebro-spinal syphilis, the nature of which may be unrecognised, unless the Wassermann reaction and the effects of treatment be observed.

Of all the early symptoms, changes in sensibility are among the most important. Over-action to unpleasant stimuli, slight loss of sensation within areas of apparent hyperalgesia, bands of changed sensibility, &c., form an important aid to early diagnosis. Moreover, these abnormal sensations disappear rapidly after efficient

treatment and usually leave no permanent disability behind them.

A possible reason for the fact that sensory changes tend to appear more often in some root areas than in others, is that these root areas are in connection by their visceral afferent fibres with certain organs known to be the seat of active spirochætosis in syphilis.

Thus the second and third cervical roots contain afferent paths from the tonsils; the first, second, third, and fourth thoracic contain afferent paths from the aorta to the central nervous system; the seventh thoracic to the first lumbar carry afferent paths from the liver, kidney, suprarenals and testicles; whilst the second, third, and fourth sacral roots may be affected either from the anus which is frequently the seat of secondary syphilitic manifestations, or from the penis and urethra with which these roots are intimately connected.

*Syphilis Meningo-Vascularis* includes conditions usually described as "subacute," "chronic," "tertiary," and "gummatous." They are known for the most part to depend upon disease of the meninges and vessels, and may be recognised in many cases by clinical evidence alone. Thus, paralysis and irritation of spinal roots point to meningitis, whilst hemiplegia and the condition usually spoken of as encephalitis, are due largely to occlusion or rupture of weakened vessels.

All cases of syphilis meningo-vascularis are peculiarly amenable to antisiphilitic remedies, and not only is the disease affected favourably, but the Wassermann reaction, if positive in the cerebro-spinal fluid, may become negative within a few months after treatment, and the excess of cells may become greatly reduced.

Thus, syphilis meningo-vascularis may be recognised by the signs and symptoms, the behaviour of the Wassermann reaction, and the presence of pleocytosis.

The authors insist on the view that the nature of the clinical manifestations of meningo-vascular syphilis at their first onset does not differ materially according to the period which has elapsed since the disease was acquired. Irritation of posterior roots, cranial nerve palsies, hemiplegia of vascular origin, do not differ clinically according to the stages of syphilis, but depend on the extent of the inflammatory reaction and the nature of the structures affected. In other words, these affections may occur three months or twenty years after infection, and are not to be regarded as "secondary" manifestations in the one case, and "tertiary" in the other.

*Clinical Varieties of Syphilis Meningo-Vascularis.*—One of the most striking characteristics of these is the frequency of multiple

lesions. It is seldom possible to postulate one lesion to account for all the signs and symptoms present. Thus in one case we may find hemianopia associated with disturbance of third, fifth, and seventh cranial nerves, and of the sphincters. In another, paralysis of cranial nerves and optic neuritis may be accompanied by affections of thoracic nerve roots and of the sphincters. Pure myelitis (apparently) may be complicated by abnormal reaction of the pupils. In another case, alteration in speech, affection of motor and sensory nerve roots in the trunk, loss of control over sphincters may coexist.

Clinically, however, cases of meningo-vascular syphilis may be divided roughly into—

(a) *Cerebral Forms*, consisting of hebetude, loss of memory, amounting in some cases to acute dementia; hemiplegia and affections of cranial nerves, and epilepsy.

(b) *Spinal Forms*, including muscular atrophy, myelitis, lateral and combined degenerations.

*Syphilis Centralis*.—The clinical varieties of syphilis centralis are considered under the headings, Dementia Paralytica, Tabes Dorsalis, Muscular Atrophy, Optic Atrophy, Gastric Crises, and Epileptic Manifestations.

Finally, there are *mixed forms* in which signs of both syphilis meningo-vascularis and syphilis of the nerve elements and neuroglia are present.

A wealth of cases is supplied to illustrate these different varieties of syphilis of the nervous system. The distinction is not merely of academic importance, but of great practical value, for whereas syphilitic meningo-vascularis is amenable to treatment, syphilis centralis is not so, or at all events to methods of treatment at present in vogue. A distinction cannot always be made by clinical symptoms alone, for these reveal only the site of the lesion, and not its nature.

Some interesting observations in regard to syphilitic muscular atrophy, gastric crises, optic atrophy, and syphilitic epilepsy are included.

*Syphilitic Muscular Atrophy* may be due to affection of spinal nerve roots (syphilis meningo-vascularis) or to syphilis centralis involving the anterior horns, and analogous to tabes dorsalis, optic atrophy, or the so-called "parasyphilitic" lateral and combined scleroses.

*Gastric Crises* are not of necessity a sign of tabes dorsalis. Any subacute irritation of the fibres of the thoracic posterior roots, whether inside or outside the substance of the spinal cord, may lead to periodic attacks of uncontrollable vomiting. Even when there is evidence of affection of the posterior columns, it may be secondary to vascular changes, and not due to a

systemic reaction to the virus which forms the essential lesion in *tabes dorsalis*. Gastric crises may be due to irritation of the sixth to the tenth posterior roots (syphilitic meningitis), and be accompanied by radicular pains and over-response to painful stimuli in the territory supplied by these roots. But some gastric crises are not associated with these root-symptoms, and are thus due to affection of the posterior columns themselves (syphilis centralis). Recurrent pains and paroxysmal vomiting may continue after the disease itself has ceased to be active, thus illustrating a law little recognised by neurologists—that “a stationary disease may produce paroxysmal manifestations.”

*Syphilitic Epilepsy* may be produced by “gummatosis” (syphilis meningo-vascularis) or by syphilis centralis, the so-called parasyphilitic variety. Clinically the two varieties cannot be distinguished from each other except by the behaviour of the Wassermann reaction in the cerebro-spinal fluid, which in all cases of syphilis centralis is positive, and is not materially affected by anti-syphilitic treatment. Whereas in syphilis cerebri meningo-vascularis the reaction is negative as a rule.

*Optic Atrophy*.—It is shown that syphilis can produce degeneration of the optic nerve exactly analogous to the destruction of the posterior columns of the spinal cord in *tabes dorsalis*. It is thus a manifestation of the activity of syphilis centralis and may occur apart from *tabes dorsalis* or any analogous condition.

Such cases are distinguished from those of atrophy following optic neuritis resulting from meningo-vascular syphilis.

*The Wassermann Reaction in Cases of Syphilis Meningo-Vascularis and Syphilis Centralis*.—In syphilis meningo-vascularis the character of the Wassermann reaction depends on whether the spinal or basal meninges are affected. Should clinical evidence point to affection of the contents of the spinal canal, and occasionally when the basal meninges alone appear to be affected, the reaction is positive in the cerebro-spinal fluid. When, however, the disease seems to be limited to the intracranial contents, the reaction in the cerebro-spinal fluid tends to be negative or weakly positive.

In cases of syphilis centralis, such as *dementia paralytica*, *tabes dorsalis*, muscular atrophy, and primary optic atrophy, the Wassermann reaction in the cerebro-spinal fluid is strongly positive so long as the disease is active. When, however, the disease has come to an end, leaving behind it a greater or less amount of irreparable degeneration, the Wassermann reaction may diminish in strength, or even become negative in the cerebro-spinal fluid.

Under treatment with salvarsan or neosalvarsan, the Wassermann reaction in cases of syphilis meningo-vascularis, if at first positive, will usually become negative in the cerebro-spinal fluid within six months. On the other hand, the more the clinical manifestations point to syphilis centralis, the less will they yield to any of the present forms of anti-syphilitic treatment.

Whatever the situation and nature of the lesion which is responsible for the clinical manifestations, some secondary degeneration must almost certainly result. Many of the signs and symptoms in cases of syphilitic disease of the central nervous system are therefore not amenable to any form of anti-syphilitic treatment.

It is therefore most important to make the diagnosis of syphilis early in disease of the central nervous system, so that treatment may be employed before the advent of these secondary changes.

But no complete diagnosis or prognosis can be made until the patient has been under observation and treatment for at least six months, and the cerebro-spinal fluid has been systematically examined from time to time.

The method of performing the Wassermann reaction is that adopted by Dr Fildes (Fildes and M'Intosh, *Brain*, 1913, vol. xxxvi., p. 193), who employs a standard serological technique, by which the reaction can be estimated quantitatively.

The results of examination of serum and cerebro-spinal fluid in all cases are simply and ingeniously presented in the form of a fraction, in which the serum test serves as the numerator, and the cerebro-spinal fluid test serves as the denominator. The maximum positive reaction in each case is taken as 4, and the results of five separate examinations of graduated dilutions of serum and cerebro-spinal fluid respectively are recorded. Thus a completely positive reaction (complete inhibition) would read:—

$$\begin{array}{r} \text{Serum, } 4 \cdot 4 \cdot 4 \cdot 4 \cdot 4 \\ \text{C.S.F., } \frac{4 \cdot 4 \cdot 4 \cdot 4 \cdot 4}{4 \cdot 4 \cdot 4 \cdot 4 \cdot 4} \end{array}$$

Whereas a completely negative reaction (complete hæmolysis) would read:—

$$\begin{array}{r} \text{Serum, } 0 \cdot 0 \cdot 0 \cdot 0 \cdot 0 \\ \text{C.S.F., } \frac{0 \cdot 0 \cdot 0 \cdot 0 \cdot 0}{0 \cdot 0 \cdot 0 \cdot 0 \cdot 0} \end{array}$$

The doses of neosalvarsan usually given are from 0·6 to 0·9 g. intravenously; and of salvarsan 0·4 to 0·6 g.

LEONARD GUTHRIE.

**ON THE NEOSALVARSAN TREATMENT OF SYPHILIS.** DOUGLAS  
(211) J. GUTHRIE, *Edin. Med. Journ.*, 1914, xii., Feb., p. 137.

NEOSALVARSAN is less toxic than salvarsan and fatalities are due either to bacterial and chemical impurities in the water or to the salt used in making the saline, if such be used, or to oxidation of the drug by the oxygen in the water or by exposure to air. Therefore the amount of water should be reduced to a minimum, an isotonic solution should be obtained without the use of sodium chloride, and the time of the manipulations should be shortened as far as possible.

This may be done by adding the required dose of neosalvarsan to 10 c.c. of cold boiled distilled water, filtering and injecting at once by veni-puncture. This all just occupies two to three minutes. The reactions liable to follow in order of frequency are: (1) rise of temperature, (2) headache, (3) nausea and vomiting, and (4) diarrhoea. It should always be controlled by the Wassermann reaction and followed by a course of mercurial treatment, such as  $\frac{1}{3}$  of a grain of mercuric cyanide in a 1 per cent. aqueous solution daily intravenously.

A. NINIAN BRUCE.

**THE FUNCTIONAL EFFECT OF EXPERIMENTAL INTRA-  
(212) SPINAL INJECTIONS OF SERA WITH AND WITHOUT  
PRESERVATIVES.** JOHN AUER, *Journ. Exp. Med.*, 1915, xxi.,  
p. 43 (11 plates).

ANTIMENINGITIS serum is the only effective remedy for meningococcic meningitis, and the question arises whether a fraction of the deaths which still occur during the process of serum treatment could be attributed to the serum itself. Kramer suggested that the tricresol which was used as a preservative might be responsible for some fatal results.

The author finds that monkeys usually tolerate readily the repeated intraspinal injection of large doses of 0.3 per cent. tricresol antimeningitis serum. The spontaneous respiration is generally not disturbed. Doses of 0.3 per cent. tricresol serum as large as 8 c.c. per kilo were injected intraspinally with subsequent recovery, even when the monkey had a partial pneumothorax. Dangerous alterations of the respiration and blood pressure in the monkey after 0.3 per cent. tricresol serum given by syringe are apparently largely due to increased intraspinal pressure, for the mere reduction of this pressure has sufficed to bring about a prompt and complete recovery. The medullary centres of the monkey (vagus, respiratory, and vasomotor) are highly resistant to the action of sera when injected intraspinally, strikingly more so than those of the dog. Occasionally the mere introduction of

a hypodermic needle into the spinal dural sac of non-anæsthetised unoperated monkeys which have already received injections of 0·3 per cent. tricresol serum may produce a severe collapse. A preceding partial asphyxia seems to be a necessary condition. Large quantities of sera are rapidly absorbed from the spinal dural sac of monkeys, and the clotting time of the blood is decreased. The spinal meninges of the monkey are resistant to infection; even primitive precautions during intraspinal injections apparently suffice to prevent infection.

Dogs are much more sensitive to the intraspinal injection of 0·3 per cent. tricresol serum than monkeys; but they may tolerate as much as 6 c.c. per kilo, provided that intratracheal insufflation is maintained for some time after each injection. The chief danger in dogs after intraspinal injections of 0·3 per cent. tricresol is a cessation of respiration, for which artificial respiration is necessary. The blood pressure in the dog may be profoundly lowered by 0·3 per cent. tricresol serum, yet recovery is usually obtained if intratracheal insufflation is maintained.

The effects of 0·3 per cent. tricresol serum upon the medullary centres is interpreted to be the result of either excitatory or inhibitory stimuli. No evidence was found that either the respiratory, vasomotor, or vagus centre is paralysed. The local application of 0·3 per cent. tricresol serum upon the exposed medulla of dogs does not produce the same effect upon the respiration and blood pressure as intraspinal injection of the same serum. A solution of 0·3 per cent. tricresol serum applied locally to the medulla of dogs occasionally produces a transient respiratory stoppage, without markedly affecting the blood pressure even when intratracheal insufflation is stopped. Increased intraspinal pressure was found to be an important factor in the production of respiratory and blood pressure changes in the dog after intraspinal injection of 0·3 per cent. tricresol serum.

Both in the monkey and in the dog 0·3 per cent. chloroform serum, 0·3 per cent. ether serum, or plain horse serum, produced in general a smaller effect upon the medullary centres than 0·3 per cent. tricresol serum.

The ideal preservative for therapeutic sera would seem to be one which could be removed before injection. Ether in this respect is better than chloroform.

When intraspinal injections are given in the human being it would seem advisable to be prepared to withdraw part of the injected fluid, and to administer artificial respiration, if necessary. For a safe withdrawal of fluid the gravity method is the best; for artificial respiration Meltzer's apparatus for pharyngeal insufflation is recommended.

A. NINIAN BRUCE.



**NOTES ON THE CULTIVATION OF *TREPONEMA PALLIDUM*.**

(213) HANS ZINSSER, J. G. HOPKINS, and RUTH GILBERT, *Journ. Exp. Med.*, 1915, xxi., March, p. 213.

THE most important point of this paper is the fact that *Treponema pallidum* can be cultivated in fluid media, without the addition of agar, together with tissues sterilised by heat. This forms an excellent method of obtaining mass cultures for luetin preparation and immunological experimentation.

The strain used was cultivated at different times from the third to the fifth rabbit generations. It was first purified by filtration through a Berkefeld filter, and it was found that growth took place directly in flasks containing serum-broth mixtures with bits of fresh sterile rabbit kidney. One of the chief difficulties in the cultivation of the *Treponema pallidum* is the occasional but unavoidable contamination of the tissue, however carefully it may be removed from the freshly killed animal. It was found that this strain could be induced to grow with heated tissue instead of with fresh tissue, and in agar-sheep serum mixtures, entirely without tissue, in symbiosis with living *Staphylococcus aureus* and *Micrococcus candidans* and *Streptococcus*, and finally upon a simple medium composed of meat juice as prepared from chopped beef in the production of meat infusion media, sterilised in the autoclave, with no other additions.

An excellent method of obtaining mass cultures for luetin preparations is to use fluid media without agar, and composed of mixtures of slightly acid broth (acidity 0·2 to 0·8 per cent.) and sheep serum (or ascitic fluid, or horse or rabbit serum), containing autoclaved tissue, in long-necked flasks covered with paraffin oil.

A. NINIAN BRUCE.

**PSYCHIATRY.****RESEARCHES ON THE METABOLISM OF A CASE OF GENERAL**

(214) **PARALYSIS TREATED WITH TUBERCULIN.** (*Ricerche sul comportamento del ricambio nella cura della paralisi progressiva con la tubercolina.*) G. VIDONI, *Riv. di Patol. nerv. e ment.*, 1914, xix., p. 537.

A RECORD of a case of general paralysis in a man, aged 31, in whom the metabolism was studied before, during and after treatment with tuberculin. During the treatment there was considerable diminution in the amount of the urine passed, and in the amount of nitrogen and sulphur excreted.

J. D. ROLLESTON.

**INSANITIES OF THE PUERPERAL STATE.** F. W. LANGDON, (215) *Lancet-Clinic*, 1914, March 13.

PUERPERAL insanity as a distinct entity is non-existent. The insanity of puerperal women is the same insanity they would have developed on account of their particular make-up, in the presence of any other "stress" and exhaustion. It occurs in only 1 in 400 cases, and may be either melancholic, maniacal, demented, or confusional. The last is the most common. About 75 per cent. of cases recover. Non-recovery is often due to sepsis and exhaustion or chronic organic disease. Recurrence is unlikely in pure "confusional" cases, if uncomplicated. The possibility of infanticide should be remembered in the treatment of the condition. The paper concludes with a discussion on the subject.

A. NINIAN BRUCE.

## Review

**LES ORIGINES DE LA CONNAISSANCE.** By R. TURRÓ, Professor at (216) the Municipal Laboratory of Barcelona. Paris: Felix Alcan, 1914. Pp. 274.

IN this modest volume Professor Turró has worked out an interesting thesis in a highly suggestive and original fashion. He begins by analysing the sensation of hunger, and shows that there exists first of all a "cellular hunger," unconscious, a hunger of the individual cell consecutive to the want of water, glucose, salts, or whatever it may be. It is not a vague or indefinite need, but a very precise and concrete demand for whatever is wanting. As long as the organism itself can supply this need, so long is the "hunger" unconscious. When, however, the organism cannot provide the necessary aliment, cellular avidity manifests itself in consciousness as a sensation of hunger. It corresponds in the psychical sphere to what Professor Turró calls the trophic reflex in the vegetative sphere. This "trophic experience," this auto-regulation of metabolism, is the fact of primary importance in the author's view. It is at first merely biological, but, as hinted above, it eventually becomes a fact of a psycho-physiological order. Hitherto the origins of knowledge have been sought in the earliest sensory impressions of the organism, whereas Professor Turró maintains that it is this "trophic experience," rising into consciousness, which first introduces an element of differentiation among still obscure and confused sense impressions, and thus leads the way to further differentiation by which consciousness of the external world is established.

This is merely the briefest summary of the thesis, which the author elaborates in a cogent and persuasive manner, and neurologist, psychologist, and metaphysician alike will find the book well repay perusal.

# Review of Neurology and Psychiatry

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## Original Articles

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### THE NEW PSYCHIATRY.

By W. H. B. STODDART, M.D., F.R.C.P.,

Lecturer on Mental Diseases at St Thomas's Hospital, London.

(The Morison Lectures delivered at the Royal College of Physicians,  
Edinburgh, in March 1915.)

#### LECTURE II.

#### *Psycho-Analysis.*

IN to-day's lecture I hope to give you a description of psycho-analysis, its aims, objects, uses and technique.

Psycho-analysis is a method of obtaining a complete history of the patient's illness and an insight into his modes of thought, such as can be obtained in no other way. A detailed history of a mental disorder includes an account, not only of the manifest disturbances of conduct, but also of the patient's thoughts in association therewith, and of the various experiences and events which led up to it, together with their bearings on one another from the patient's point of view.

When all this has been ascertained, it becomes necessary to trace the patient's particular habits of thought back to their origin. Psycho-analysis achieves this result by reviving his

memory for numerous incidents and events which he had forgotten, and by unearthing his hidden, repressed and therefore unconscious complexes, such as were considered in the first lecture, especially those having relationship with his present illness.

The true relationship is then discussed in such a way as to place these complexes in their true light. This is in reality a kind of re-education whereby the patient acquires self-realisation and develops his character and personality.

When all this is accomplished the recovery of the patient, which is the chief aim of psycho-analysis, results as a matter of course.

So far I have constantly referred to "the patient," but it must be understood that psycho-analysis can be practised with benefit upon a normal individual. It is, in fact, desirable and a duty for every physician who contemplates using the method either to be psycho-analysed or to psycho-analyse himself, so that he shall not read his own complexes into his patients, shall come to his work, so to speak, with clean hands, gain a knowledge of himself such as cannot be obtained in any other way and achieve that unity with himself which will give him self-confidence.

I might here mention that part of the mental equipment of a successful psycho-analyst consists of a knowledge of ancient mythology. Psycho-analysis of the many beautiful stories of the ancients gives him a thorough knowledge of the development of human thought. A study of the symbols of the Church and of the Egyptians, Indians and Chinese, of the totemism of the North American Indians, and the superstitions of uneducated people is also helpful; for they all throw light upon the history of the development of the human mind. In each one of us our mental development is to be regarded as a recapitulation of the mental development of the human race, just as the development of the embryo is a recapitulation of the anatomical development of man.

I ought to say at once that psycho-analysis is not easy, even for those who have far greater experience of the method than I have, and it takes a very great deal of time. It is customary to spend with each patient an hour a day five times a week. It then takes a fortnight to obtain a complete history and a clear insight into the nature of the case, and at least three months to accomplish a cure. Most cases take longer than this, and even Freud himself,

purposely selecting very difficult cases, has spent as much as three years over a single patient before he effected recovery. It is satisfactory to note that a partial analysis is often beneficial, and we are constantly endeavouring to discover "short cuts," but even then we are bound to acknowledge the difficulty that psycho-analysis is expensive. It is not more so, however, than many surgical operations, and the gratitude expressed by patients is sufficient testimony that all this time and expense are well worth while.

I now come to the question, "What patients are suitable for psycho-analysis?" and this resolves itself practically into "What patients are unsuitable for psycho-analysis?"

As I have already said, psycho-analysis requires intelligent co-operation of the patient. It follows, therefore, that the patient must be intelligent. He must have some pretence to education, and I do not recommend the employment of this method with the labouring classes, although successful analyses have been reported. Similarly it is not wise, at any rate for a beginner, to attempt the analysis of young children, as it requires very special tact.

It also follows that the patient must be willing to co-operate. You cannot analyse a patient who does not wish it. It is true that it is quite possible to learn much about his complexes by conversation and critical observation, but you will be unable to reveal them satisfactorily to himself. Then there is the type of patient who proclaims that he is perfectly willing to be analysed, but, when the work has well begun, he does not take it seriously, and plays his part in a desultory way. Such patients flit from one doctor to another, always dissatisfied with the last, and expect to be cured without making any effort themselves. All such patients should be left severely alone.

Lastly, it is practically useless to attempt psycho-analysis on a patient who has passed middle age. At best, the analysis of a person who has passed his fortieth year is sure to be lengthy.

In order to render clear what classes of mental disorder are suitable for analysis, let me first explain how I classify them:—

#### *I. The Neuroses.*

Neurasthenia. The anxiety neurosis. Some forms of hypochondriasis.

II. *The Psychoneuroses.*

Hysteria.

The Compulsion Neuroses:—Obsessions, morbid fears and compulsions.

III. *The Psychoses.*Maniacal - depressive insanity. Dementia præcox  
Paranoia.IV. *Confusional Insanities. (Synaptic Rebuff.)*

Exhaustion insanities from overwork, worry and mental shock. Infection insanities, including febrile and post-febrile delirium.

Toxic insanities (alcohol, hashish, belladonna, &amp;c.).

V. *Thyroigenous Insanities.*

Myxœdema, exophthalmic goitre, cachexia strumipriva (cretinism).

VI. *Epileptic Insanities.*VII. *Organic Insanities.*

Cerebral thrombosis, tumour, aneurysm and abscess.

Acute and chronic meningitis.

General paralysis.

Huntington's chorea.

VIII. *Chronic Cortical Atrophy.*

Insanities of involution (abiotrophic).

Arteriopathic dementia (syphilitic, senile, and renal).

IX. *Congenital Mental Defect (Amentia).*

Idiocy, imbecility, backward children, &amp;c.

Let us consider these in the reverse order. Cases of congenital mental defect cannot be psycho-analysed because there is insufficient intelligence for co-operation. Besides, no benefit could result from the analysis of such cases.

Patients, who are suffering from organic cerebral changes, and fall within the groups VII. and VIII., are unsuited to psycho-analysis, because the method cannot cure such diseases. It is, of course, quite possible that a patient suffering from a cerebral tumour might be benefited by the method, but it would be obviously incorrect treatment.

Of epilepsy there appear to be two varieties, one of toxic origin (probably the most common variety of idiopathic epilepsy), and the other of psychical origin. The differentiation between these can be made by inquiry into the history, when it will be found that in the toxic variety the convulsions are of more or less regular recurrence, and are not traceable to any immediate exciting cause; while in the psychogenic variety the convulsions are usually induced by some mental shock or incident of psychical importance. In the former variety mental therapeutics can accomplish nothing, but much is to be expected from psycho-analysis of the psychogenic cases. Indeed, several cases of cure by this method have been reported, and it is probable that those epileptics recorded as having been cured by hypnotism were also cases of psychogenic epilepsy.

Thyroigenous insanities are, of course, best treated with appropriate medicines.

In the fourth group, mental confusion is so profound that psycho-analysis is impossible. You will observe that the alcoholic insanities fall within this group, but I must direct your attention to the fact that alcoholic intoxication and the tendency to drink excessively are two different things. The latter is to be regarded rather as a psychasthenic compulsion, and would therefore fall under Class II. Alcohol is often taken as a refuge from mental conflict, and when this is the case, psycho-analysis would be the proper method of cure.

We now have the first three groups left for consideration, and these are all of interest to the medical psychologist.

Maniacal-depressive insanity is a psychosis characterised by attacks of mania and melancholia, and it may be taken as a general rule that no attempt should be made to analyse these patients during the course of one of their attacks. A maniacal patient is in too excited a condition to co-operate, and psycho-analysis during an attack of melancholia tends to make the patient worse. The analysis should be undertaken between the attacks, and many medical psychologists have come to the conclusion that it should not be pushed too far. A partial analysis of a few hours, laying bare the most obvious of the patient's repressed complexes, which are very near the surface, is often sufficient to effect a permanent recovery; whereas anything like a complete Freudian analysis only does harm. Some of the most experienced psycho-

analysts, however, disagree with me on this point. I ought to say that the psycho-analyst may often obtain a hint as to the nature of these complexes by a careful study of the patient's conduct, delusions, and apparently incoherent remarks during an attack; but the analysis itself should be postponed until the attack is over.

The analysis of dementia præcox should certainly not be attempted by the beginner. Most of the cases are too inaccessible mentally, while some of the earlier cases are too accessible, by which I mean that within a week of starting the analysis the patient has flooded you with an enormous tangle of repressed sexual complexes, out of which there seems to be no possibility of escape. The most favourable cases are those of katatonia. I must warn the beginner against cases of dementia paranoides for his own sake. Negative transference, which I shall be explaining later, is liable to be set up, and may induce the patient to inflict actual bodily injury upon his doctor, which may go as far as murder, a most undesirable sequel to the doctor's patient efforts.

The same state of affairs may arise in the analysis of cases of paranoia, but we also encounter another difficulty. The patient suffers from a systematised delusional state on which he bases his whole attitude to the outside world, and he refuses to believe that there is anything amiss with his mentation. This being the case, it is only to be expected that he will refuse mental treatment of all kinds. I have not myself had the opportunity of attempting psycho-analysis on a patient of this kind, but some of my colleagues have told me that they have been successful with some cases. I understand, however, that most psycho-analysts regard the prognosis of this disease as unfavourably as it was deemed before the introduction of their method of treatment.

In Class II. we come to the cases for which psycho-analytic treatment is pre-eminently satisfactory. These are the cases upon which Freud made his earlier and, indeed, the greater part of his studies. These are the cases that the psycho-analyst likes to meet.

Many hysterical patients can be cured by other means, and there is no necessity for psycho-analysis until such means have failed, or unless persistent relapse occurs after the treatment.

For the compulsion neurosis, however, imperative ideas, obsessions, morbid fears, irrepressible thoughts and morbid impulses, there is no other treatment than psycho-analysis, which is remarkably efficient and satisfactory.



Of course, no psycho-analyst claims that his method is infallible, even in cases of hysteria and psychasthenia. It is necessary to say this because many of the critics like to say that he does put forward such claims. Psycho-analysis has its failures as well as its successes, just like any other mode of treatment; but we do claim that psycho-analysis is more successful than other methods in suitable cases, the reason being that each patient is treated as an individual with a mind of his own, peculiar to himself, and not as a person suffering from a disease for which the panacea is a "rest-cure," now well-known to be inefficient in many cases.

The disorders of Class I. are also suitable for psycho-analysis, but it is soon found that a complete psycho-analysis is unnecessary, because the cause of the trouble is soon found, and appropriate advice can be given accordingly. I shall refer to such matters in my next lecture.

*Technique.*—Before beginning a course of psycho-analysis it is necessary to make sure that it can be continued. You must be sure that neither your own engagements nor those of the patient are likely to interrupt it. To leave the patient with a half-revealed complex for more than a day or two will only make him worse. For this reason psycho-analysis is ill adapted to institution work. At any rate, it cannot be carried out by medical officers whose time is occupied by administrative duties. In private, the financial aspect must also be considered, and you must be satisfied that the patient can afford to continue the treatment for at least four months, not only because a doctor cannot afford to spend an hour a day without remuneration, but because free cases are for some reason unsatisfactory to treat.

The patient is first systematically examined, and a provisional diagnosis made. All defects in physical health are remedied, such as errors of refraction, carious teeth, sources of septic infection, nasal obstructions, and so forth.

When it has been decided that the patient is a suitable case for psycho-analysis, he is directed to sit in a comfortable arm-chair by the consulting-room table, more or less facing the doctor. This is my own method, but some physicians arrange that the patient shall face another way, so as not to be distracted by his examiner's changes of expression. Freud himself recommends that the patient lie on a comfortable couch, and that the physician sit at the head of it, so that the patient cannot see his face.

Many physicians begin with an association experiment with, or more usually without, the use of a galvanometer, sphygmograph, and stethograph. If it is decided to employ these instruments, the sphygmograph and stethograph are fitted with a Marey's tambour and revolving drum for recording alterations in the frequency of the pulse and respiration. The galvanometer, if used, should be delicate, astatic, and of high resistance, and it should be arranged with its two poles lying in two basins of water. The circuit is completed through the patient, each of his hands lying in one of the basins of water. A galvanic cell generating a weak electrical current may or may not be introduced into the circuit. In an association experiment with an ordinary patient, all these instruments are mere accessories, but they may play an important part in attempting the analysis of a suspected criminal.

The physician now takes a list of quite ordinary words, usually about a hundred, and reads them one by one to the patient. These are known as "stimulus words," and the patient is required to react to each in succession by stating the first word that comes to his mind in association with the stimulus word. The physician works with a stop-watch, and the patient is required to react as quickly as possible; a normal reaction takes about two seconds. Opposite each stimulus word the psycho-analyst writes the "reaction word," and the time taken by the reaction.

I append here a list of suitable words, but it is as well for the doctor to introduce here and there words which appear to have some bearing upon the patient's own malady.

Quiet	Law	Correct	To play	Despise
Wall	Trouble	Pencil	Threaten	Tooth
Journey	Whisky	Woods	Habit	Book
Bible	Justice	Yellow	Dance	Wild
Apple	Work	Dream	Afraid	Box
Salt	Lion	Insolent	Child	Thirsty
Tobacco	Hammer	Ride	Sing	Hard
Cottage	Crowd	Soldier	Frog	Moon
Love	Paint	Thief	Proud	Glass
Sorrow	Rent	Green	Wool	Sympathy
Sheep	Ring	Joy	Doctor	Street
Water	To listen	Quarrel	Brother	Harm
False	Kiss	Choose	Men	To tell
Wash	Policeman	Deep	Health	Boy
Rich	Soft	Mouth	Mountain	Table
Dark	Stork	Anxiety	Rough	Duty
Wind	Luck	Friend	Bed	Ink
Wish	Foot	Smooth	Girl	Carpet
Dog	Change	Dirty	Blood	Knee

These words are read through a second time and the associations again noted, but it is not necessary to record the reaction time on repetition.

The doctor now searches his results for what are known as "complex indicators." These are:—

- (1) Undue prolongation of the reaction time (four seconds or more).
- (2) Failure to react to a word.
- (3) Strange and incoherent associations.
- (4) Apparent contradictions.
- (5) Perturbation of several reactions following a certain association.
- (6) Failure to react with the same word on repetition of the test.
- (7) Accompanying motor and vasomotor phenomena, such as restlessness, lip-biting, nail-picking, blushing, &c.
- (8) Increase of frequency of the pulse and respiration.
- (9) The generation of weak electrical currents by the body, or, if a cell is introduced into the circuit, alteration of the electrical resistance of the body.

By a little detective work it is often possible to make a shrewd guess at some of the patient's repressed complexes; but your own conclusions should never be communicated to the patient. It is legitimate to ask him a question which forces him to admit something that he is obviously withholding, but it is not permissible to do more than this.

The various "complex indicators" just mentioned are due to intra-psychic "resistances." Some of these are between the pre-conscious and the conscious, and constitute resistance to a disclosure of the complex *to you*. Others are between the unconscious and the preconscious, and constitute a resistance to disclosing an unconscious complex to the patient's own consciousness, and incidentally to you.

These "resistances" have to be overcome, and the method is to take each of the associations which have revealed themselves as complex indicators, and get the patient to explain them. This he can very readily do with many of his associations by relating some incident in his past experience. Some will prove valueless and be discarded, others worth noting.

Some of his associations, however, will turn out to be a puzzle to himself. These are important and should be followed up. What is called "continuous association" may first be tried, the patient being told not to stop at the first association, but to go on from one word to another until some light is thrown on the first association; or the particular reaction may be used as a starting point for a "free association" to be described presently. If during a series of continuous associations the patient comes to a stop, a block, a resistance, he should be urged to find an association. You say to him, for example, "Go on, you must think of something!" then, after a short pause, especially when he shows some motor restlessness, "What is in your mind now? You must tell me." In this way you work through all the reactions and, by the end of the test, you have a very fair amount of material to work upon.

The method of "free association" is conducted in much the same way, except that no stimulus words are given. The patient is directed to make himself quite comfortable, and to assume a passive, inert frame of mind. He is then told to allow his thoughts to flow as they will and to exercise no control of them whatever. As they flow in this way he is to speak everything that comes to his mind; no matter how incoherent his speech may seem, and no matter how painful or repugnant the thought may be, he must speak it out. He is to allow his thoughts and speech to run wild. In this way his associations will here and there tap the unconscious. After a few sittings you can sometimes tap the unconscious almost as soon as he enters the consulting room by making some utterance which calls for no specific reply, such as "Yes?" or "Well?" and waiting for him to speak. It may seem ungracious or uncereemonious that you should not enter into the conversation, but you must let him do all the talking.

In the course of a free association you will again come across "resistances." The patient will tell you that his mind is a blank and that he can think of nothing. You reply, "Never mind: go on talking." Or he will become silent. Your reply is to become silent too. You wait for seven or eight minutes sometimes, looking at him expectantly the whole time, until something comes up from the unconscious; or you interrupt the silence suddenly with "Talk! what is the matter with you? Go on talking!" or, at the slightest sign of restlessness, you say, "What are you thinking of now? Why don't you tell me?"

These resistances are difficult to describe because they vary so much with different patients. I have seen a patient fall over the side of the chair, as if collapsed, remarking, "Oh, doctor! what are you doing to me?"—a patient, mind you, who went about his business during the rest of the day as if there were nothing the matter with him, although he was constantly tormented by psychomotor hallucinations and other symptoms.

From time to time it is well to recapitulate to the patient what he has told you and get him to draw his own conclusions as to the nature and cause of his malady. I wish to insist a little on this point, that he tells you and that you do not tell him, because the critics like to say that the psycho-analyst puts suggestions into the patient's mind. It is true that the patient will sometimes ask, "Is that right, doctor?" to which my usual reply is, "Of course it is right, because it is your mind that has come to this conclusion, not mine, and the malady is yours, not mine." Sometimes, of course, it is necessary to counteract some absurd conclusion, but I have found that such conclusions usually originate in a suggestion given to the patient by another person. Beginners in psycho-analysis are liable to make this very mistake. They tell the patient their conclusions as to the nature of his complexes before he has discovered them for himself. These are what Freud has termed the "Wild psycho-analysts." Sometimes their conclusions are correct, sometimes incorrect. One patient of mine told me that a certain doctor after one week's analysis informed him that he was in love with his mother, to which, not understanding what was meant, he replied, "Of course I'm in love with my mother." Now it happens that the doctor was right; the patient's libido was unconsciously fixated on his mother, so much so that, although he was forty years of age and had been in love many times, he could never bring himself to marry the girl of his choice. Psycho-analysis, as a method of bringing hidden complexes to light, has been compared to opening an abscess; but this doctor's method was more like hitting an abscess, not opening it.

I can here foresee an objection that there is no need for the psychologist if he be not allowed to supply interpretations of the patient's data or even to engage in conversation, and I have indeed had the experience of a patient who, while admitting her recovery, remarked, "But I do not see what you have done." I accepted that as a very great compliment.

As a matter of fact, the work of the psychologist is at times very great at overcoming resistances, which sometimes last for several sittings. One form of resistance for which you must be on the watch is what the Germans call *vorbeireden*—as we should say, “talking past the point.” The patient suddenly becomes loquacious and hurries past a certain association, just as a hostess at a dinner-party may suddenly become talkative and change the conversation, knowing that it is getting dangerously near a tender subject for one of her guests. The analyst’s duty is the reverse of this. He brings his patient back to the point, discusses it right out, and perhaps starts a new series of associations. Then again it is desirable to encourage associations which promise to revive infantile memories. Such memories are usually strongly visual and difficult to associate with words; it is therefore well on such occasions to ask the patient to close his eyes, to see pictures, and to relate what he sees. Indeed it is helpful in all psycho-analysis that the patient should keep his eyes closed. His mental and bodily attitude should resemble that of going to sleep in that the mind should be allowed to wander, but there is the difference that the subject’s attention is directed to his own psychical activities. Of course he requires a certain amount of practice before he is able to do this successfully.

His part of the work is by no means easy, and many a patient attains peace of mind at the expense of his hair turning grey; not as a result of the difficulty of technique, but as a result of overcoming resistances.

I now come to the interpretation of dreams which Freud has designated the “royal road” to the unconscious. In sleep, these parts of the nervous system which subserve phenomenal consciousness are more or less in abeyance, and they are only aroused temporarily by associative stimulation from the nervous mechanisms subserving unconscious activities. If these unconscious activities were allowed to become conscious, if they were allowed to rouse the nervous arrangements subserving consciousness to full activity, sleep would of necessity cease: but the constant desire of the sleeper to go on sleeping prevents unconscious activities from becoming conscious in an undisguised form, so that sleep continues under the guardianship of the dream. This will become clearer as I proceed.

The interpretation of dreams, being the royal road to the

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unconscious, constitutes a very important part of psycho-analysis.

We have to recognise the "manifest" and the "latent" content of a dream. The manifest content is contained in a description of the incidents of the dream as the dreamer would relate them at the breakfast table the following morning; but, by studying the mental associations of dreams, Freud has discovered that each contains a deeper meaning, which has been called the latent content. This latent content is invariably the imagined fulfilment of an unconscious wish. This is the real purpose of dreaming, to gratify unconscious desires which can obtain gratification in no other way; while it is the distortion of the dream which serves as the guardianship of sleep.

In children and imbeciles, who are children who have not mentally grown up, the wish-fulfilment is undisguised. If a child dreams that it has a rocking-horse, or that it is driving its father's motor car, this means that he would like a rocking-horse, or he would like to drive the car. In a child very little repression has yet taken place, and therefore unconscious mentation plays a very small rôle in the mind of the child. In an adult, on the other hand, the wish-fulfilment is disguised and distorted so as to be unrecognisable by the phenomenal consciousness of the dreamer. I shall not have time to discuss fully the psychology of this distortion, but I may say that roughly it is necessitated by the censorship existing between the unconscious and the preconscious. The disguise is assumed so that the dream material may pass the censor into consciousness.

Before discussing the mechanism of this distortion, let me say that the material upon which a dream is based consists of:—

(1) Some incident of psychical importance on the day before the dream—the dream-day—or at least some memory, occurring during the dream-day, of some recent incident of psychical importance.

(2) Some memory of long ago, usually early childhood.

(3) The fulfilment of an unconscious wish. This may be incited by a wish during the dream-day which circumstances prevented being gratified, or by a wish unfulfilled and suppressed during the dream-day, or by some wish arising from the unconscious during the night, or by an actual wish-incitement occurring during sleep, such as thirst or distension of the seminal

vesicles. Freud considers, however, that a wish occurring during the dream-day is insufficient to provoke a dream unless it is reinforced by an infantile wish.

It may be taken as a general rule that all the dreams occurring in the same night refer to the same subject, and most people have had the experience of a series of dreams occurring on successive nights, obviously relating to the same subject. In such a series the wish fulfilment is more boldly expressed and less concealed in the latter dreams than in the earlier. It is therefore wise to start the analysis of such a series by taking the last dream first.

That the dream actually has a secret meaning which turns out to be a wish fulfilled must be proved afresh for every case by means of an analysis; but it is helpful to know what are the mechanisms of distortion, although dreamers themselves will tell you this to a certain extent as the analysis proceeds.

The mechanisms of distortion are exactly the same as those which produce symptoms of the psychoses and psychoneuroses, viz.: Displacement, Condensation, Symbolisation, and Dramatisation. These and some other features of dreams I will briefly explain.

1. *Displacement*.—The unimportant details of a dream are often the most significant, as also are the parts which are vague, subsequently forgotten (repressed), or are related differently on being told a second time ("secondary elaboration," to which I shall refer again). It is best to start analysing a dream at such parts. Similarly when a person has a "dream within a dream," when he dreams that he wakes up from a dream and goes on dreaming, saying to himself, "Why, I was only dreaming," such "dream within a dream" is important. By this I mean that disguise is regarded by the censor as incomplete and that analysis should therefore be so much less difficult.

2. *Condensation*.—Almost every element of a dream represents not one, but a number of unconscious thoughts fused into one conscious thought, so that the element is said to be "over-determined." For example, Freud relates that a lady dreamed that she had crushed a June bug ("ladybird," as we would call it) in shutting down a window. This incident in the dream condensed the following thoughts: She had allowed a moth to drown in a glass of water; she had read a story the evening before of some boys throwing a cat into boiling water; she was occupied with the



subject of cruelty to animals; years before her daughter used to be cruel to insects by pulling off their wings; she also used to collect butterflies, and used arsenic to kill them; during the same year there was a pest of ladybirds and the children used to crush them, at the same time she saw a person tear off their wings and eat them, and so on.

Ernest Jones tells of a patient who dreamed that he met a man named Lysanias, who is mentioned in Luke iii. 1 as being the tetrach of Abilene. Analysis revealed that the patient had indulged in *licentious* sexual practices when at the *Lyceum* (as they called his school) in an old *abbey* with a boy named Leney. This is, of course, a remarkable instance, but such condensation is not an exception, but the rule. Persons, for example, who are unknown to the dreamer are regularly composite persons constructed from several people he does know. Sometimes such condensation is accomplished by the presentation of the features of one person with the mannerisms and speech of another. Condensation causes vividness of the presentation and, *vice versa*, vividness implies condensation.

3. This is a convenient place to mention that dreams are always egotistic, and that the dreamer himself is always represented. Indeed he is always the chief actor, and a person in the dream whose features he cannot recognise may be himself. If there is difficulty in deciding which of two unknown persons represents the dreamer, it is a safe rule to assume that it is that one whose emotional experience is the greater. This brings me to another subject.

4. *Emotional Affect in Dreams.*—The emotional tone attaching to any percept in a dream is never distorted. It is always correct. It is true that the affective tone may not appear, but when it does, it is always the correct one for the situation. The situation, however, is disguised; so that pleasure may be felt when the dreamer meets three lions in the desert, the lions symbolising three friends, or fear may be expressed when the dreamer has the chain of mayoralty placed around his neck, if the chain symbolises the hangman's rope. This brings me to the subject of

5. *Symbolisation, which is rife in Dreams.*—In the majority of cases, symbols are a cloak for some sexual idea. Long objects, such as sticks, umbrellas, ships and airships, snakes and trees, commonly represent the penis. A patient of mine dreamed that

he was climbing a marble pillar; on analysis it turned out that the pillar represented the penis, and that climbing it symbolised masturbation. Caskets, boxes, wagons, and such articles usually indicate the female body. Tunnels and passages represent the vagina. Rhythmical movements, such as sawing, filing, horse-riding, and going upstairs, are symbolic of the sexual act. Emperor and empress and king and queen are the dreamer's father and mother. Right and left often mean right and wrong in a moral sense. Architectural symbolism is quite commonly employed for the architecture of the body; and the associations belonging to plant life and to cooking are often chosen to conceal sexual images.

6. In this connection I may refer to "somatic displacement." The nose or an arm may symbolise the penis, and the head may symbolise the uterus. A patient of mine dreamed that she had an intense headache which was relieved by her emitting masses of red flesh from her mouth. Analysis revealed that the dream was the disguised fulfilment of a wish to have another child, the headache symbolising labour pains and the masses of flesh representing the baby. She suffered from the anxiety neurosis, and her husband had practised coitus interruptus since the birth of her first and only child seven years previously, when she experienced great suffering from the difficult labour.

7. Inversion or representation of the opposite is common. As examples, another person's attempt to kill you may represent an unconscious wish on your part to get rid of him. A tree carried on a man's back may be symbolic of his penis. The sequence of events may also be transposed. I ought here to contradict in part what I have said about the emotions in dreams, viz., that they are always correct if applied to the latent content. It happens occasionally that an emotion is represented in a dream by its opposite. Inversion of some particular element usually means that something else in the dream is also inverted.

8. The doctor himself, the psycho-analyst, is often represented in the dreams of patients. In a particularly transparent dream a patient of mine found herself in church. There was a large congregation including a certain clergyman—the Rev. X.—while another clergyman whom I will call Y. was conducting the service. The Rev. Y. and the whole congregation then vanished or left the church with the exception of the Rev. X. and my patient. On

analysis the Rev. Y. turned out to be myself, and when I tell you that a crowd or multitude of people signifies a secret, the interpretation becomes clear. The patient had a secret which she did not wish to reveal to me, but wished to do so to the Rev. X. There was no congregation, *i.e.*, no secret, when I had gone.

9. *Dramatisation*.—Incidents, people and things are selected and arranged so as to present the dream in a more or less dramatic form. Both past and future become the present so as to fit into the picture.

Conjunctions such as "if," "although," "as though," "either-or," and "because," do not occur in dreams. Logical relationship is represented by simultaneity, "because" by succession in time, and "either-or" is equivalent to "and" in the dream.

10. *Secondary Elaboration*.—Dreams are not commonly related with the strictest accuracy, even when the sleeper wakes, and they are frequently changed here and there on being related a second time. In waking moments the censor is more alert, and the latent content becomes still further disguised in order to render it acceptable to clear consciousness, and just in those parts where there is an unconscious feeling that the disguise is not sufficiently complete. These, therefore, are favourable points for starting the analysis of a dream.

A dream is usually analysed easily if there has been much resistance to relating it, or when there are such remarks as, "But it was only a dream!" or, "What is the use of telling it? That will not help me." Attention should always be paid to such comments on the dream, and they should be regarded as part of the latent content.

In analysing a dream, it should be taken item by item. The patient should be asked who or what is represented by the item. He should be directed to form a series of associations with it and told to speak everything that comes to his mind, as has been described as free association. Often it is useful to start again from the beginning, when it is usually found that the associations lead by another path to the same conclusion, except where there is condensation.

The associations of various items are then reviewed and the patient is asked to state his conclusions as to the meaning of the dream. The doctor then assigns it to its particular complex for future use.

Of course an experienced psycho-analyst can often see the meaning of a dream more readily than the patient, but he should always offer any interpretation tentatively, saying, for example, "Of course, you will be able to tell me whether the interpretation I am about to suggest is correct or not. If I am wrong, please say so." If the interpretation is right, the patient will often acquiesce quite readily. If incorrect, his reply is something like, "Oh, no! I am sure it does not mean that." If the interpretation is only partial or if it is partly right and partly wrong, he will say, "It might be," or "I don't think so," indicating some uncertainty. It quite frequently happens, however, that a correct interpretation induces the strongest denial and resistance to insight; but his protestation is too much and the very stoutness of his disclaimer betrays the fact that the interpretation is correct. It is better, however, to leave a dream unexplained than to force your own construction on the patient.

Again, in psycho-analysis generally, it may be desirable, after recapitulating the data already obtained, to explain your own interpretation of the patient's symptoms. For example, symptoms occasionally arise as a result of repressed homosexuality, the patient having no idea what homosexuality is, or even knowing that it exists. In such a case it would be necessary to explain this to the patient.

I will conclude my remarks about dreams by quoting a footnote from Freud: "In general it is doubtful in the interpretation of every element of the dream whether it

- (a) is to be regarded as having a negative or positive sense (relation of supposition);
- (b) is to be interpreted historically (as a reminiscence);
- (c) is symbolic; or whether
- (d) its valuation is to be based upon the sound of its verbal association.

"In spite of this manifold signification, it may be said that the representation of dream activity does not impose upon the translator any greater difficulties than the ancient writers of hieroglyphics imposed upon their readers."

Dreams are so important and helpful in psycho-analysis, that I have taken them as a pattern of the various clues and hints of what is going on in the unconscious; but we can often obtain

many suggestions from apparently trifling incidents and habits occurring in the patient's everyday life.

I have already mentioned the "press of conversation" or *vorbeireden*, occurring during an analysis as a complex indicator. Similarly, the patient may assume a sudden laughter or merriment during the serious work, an obvious attempt to disguise a painful thought. He may abruptly start picking his nails, or a woman may toy with her hair or write figures with her finger on her lap. Twitches of the mouth and eyes and many such trifles, all of which I have seen in patients, all mean something and the meaning has to be elicited by analysis.

I have referred in my first lecture to such "symbolic actions" as the old maid keeping many pets or interesting herself in the newspaper reports of divorce scandals.

A common experience of psycho-analysts is that patients leave some of their belongings after a satisfactory interview. This is an unconscious way of expressing a wish to return for further treatment.

People who have displayed a tendency during childhood to pilfer or lie and who still have an unconscious tendency in the same direction, are scrupulously careful to pay for everything "on the nail," as the saying is, or to be excessively precise and truthful whenever they make a statement, thus giving a hint of their repressed complex.

Ask any nurse why she took up the nursing profession, and she will give all sorts of reasons why she was justified in considering herself a born nurse; but, if you will take the trouble to investigate her history, you will find in quite the majority of cases that there has been some unhappiness in her domestic circle or that a younger sister has found a husband. They would not admit such reasons, even to themselves, and I make no complaint against their work.

A spendthrift usually has all the apparatus for saving money—cash-box, ledger, day-book and the rest of it, but his unconscious tendency prevents him from using them.

These are generalities, but patients and others often supply particular examples of the work of the unconscious. Dr Bernard Hart quotes a patient, for example, who had an irresistible impulse to examine the number of every bank note which came into her hands. Analysis revealed that this habit dated from an occasion

when she asked a man, with whom she was in love, to change a coin for her. He complied with her wish and, putting the coin in his pocket, said that he would not part with it. This remark raised her hopes that her love was reciprocated, and any money passing through her hands always reminded her of the incident. The man passed out of her life, however, and she strove to banish the episode from her memory, and to forget that such a desire ever crossed her mind. The repression was successful, and the complex was thenceforward only allowed to enter consciousness in disguise, viz., as an interest in money, which became crystallised into her exaggerated preoccupation with the numbers of bank notes.

An illustration from Jung. An old female patient of an asylum spent all her time huddled up and performing a stereotyped action resembling that of a cobbler sewing boots. Investigation showed that she had, as a young girl, been engaged to a shoemaker, and that the engagement was suddenly broken off.

Freud has demonstrated that the forgetting of proper names, far from being fortuitous, is always due to the activity of the intra-psychic censor. Whenever a name is forgotten or incorrectly remembered a reason can always be discovered, usually by a quite superficial analysis, why it has been forgotten. Some disagreeable memory is the common cause, associated either with the individual or with a person or place of the same or a similar sounding name. In other words, the forgetting is neither more nor less than a repression. Examples of this occur in everybody's experience every day. I always have a difficulty in remembering the name of a certain town in Italy, Ferrara, where—owing to a piece of foolishness—I had to run for nearly a mile in record time in order to catch a train in which I had already placed my luggage. The forgetting of resolutions belongs to the same category of unconscious phenomena, the commonest example being that we are more liable to forget having borrowed money than having lent it, although none of us would admit to ourselves that we have dishonest propensities.

The mislaying of objects gives another series of clues to the unconscious. I have already mentioned that patients are liable to leave some of their belongings, usually an umbrella, in the halls or waiting-rooms of psycho-analysts. Bills are more apt to be mislaid than cheques. If a cheque is mislaid, you will find that

you have a feeling that you have not given sufficient value for the money or that you have failed to declare it to the income-tax authorities or that you do not like the person who gave it to you, or there is some other unpleasant association with the cheque.

Mistakes in speaking, reading and writing (*lapsus lingue et calami*) belong to the same category. They are betrayals of repressed complexes and no psycho-analyst allows such a mistake made by himself to pass without searching for the hidden cause of it.

Similarly, he always gets his patients to relate to him such symbolic actions, failures of memory and lapses of the tongue and pen, so that he may investigate them, and thus gain access to the unconscious tendencies of his patients.

Perhaps I ought to mention two other methods of tapping the unconscious, which do not, however, belong to psycho-analysis proper.

*Crystal gazing is one.*—It does not require much practice and is quite easy for a neurotic patient. He is directed to abstract his mind from all normal sensory impressions, and to gaze intently into a glass sphere, such as I have on this table. A black background is preferable, and it is advisable not to have too much illumination. Clouds appear in the ball at first, which advance and retire synchronously with respiration. Then many reflections are unconsciously combined to form an illusory picture, which is at first vague and indistinct, but the unconscious soon fills in the details. Definite hallucinations then form which ultimately take on movement. These hallucinations represent some forgotten incident of the past life of the individual, with much less distortion than takes place in dreams. The percipient, being detached from surrounding impressions and awake only to those of his subconscious self is probably in a mild state of hypnosis.

The patient relates to the doctor all that he sees in the crystal ball, and, the memory of some incident having been revived, he is urged to connect it with his present content of consciousness by the association methods already described.

The method is not much used, but I have sometimes found it helpful in overcoming resistances in the interpretation of dreams.

*Hypnosis* is the last method which I shall mention of penetrating the field of the unconscious. It is explained to the patient

that he is to be hypnotised and the object of the procedure is expounded to him. He is directed to offer no resistance, but to allow his mind and body to become perfectly supple and flaccid, and he is told that failure to hypnotise him will be due to resistance on his part, all hypnosis being in fact auto-hypnotism. One of the various methods in common use is then employed.

On account of unconscious resistance, however, it is quite unusual, except in cases of hysteria, to obtain deep hypnosis in a neuropathic patient. Should the hypnotism be so successful as to abolish his normal consciousness, his unconscious mind is laid bare and it becomes possible to discuss with him details of incidents which in the waking state are completely forgotten. Such a state would be ideal for the recovery of repressed complexes if it could be easily induced; but it was this very difficulty that caused Freud to give it up in favour of his method of free association.

It is a matter of experience that persons who have been partly psycho-analysed are very easily, but not deeply, hypnotised; but people who have been completely psycho-analysed right back into their earliest years of infancy cannot be hypnotised at all, presumably because they have no unconscious.

If a person is to be psycho-analysed I prefer that he should not be hypnotised. For some reason or other, previous hypnosis appears to increase resistance, to augment the power of the censure. Patients who have undergone a course of hypnotism are in my experience unsatisfactory to treat by psycho-analysis. Hypnotism should, as a rule, be used for post-hypnotic suggestion only.

*The Transference.*—In the first lecture I explained that every constellation of ideas which we call a "complex" is possessed of a certain amount of psychical energy or *horme*, desire plus a conative trend; and it is this *horme* or libido which usually conflicts with the herd instinct and brings about that mental conflict which secures adjustment by repression of the whole complex into the unconscious.

Fixation of the libido in the unconscious may be on the father (*oedipus-complex*), or on the mother (*electra-complex*), on a person of the same sex as the patient (*homosexual-complex*), on a person of the opposite sex who has passed out of the patient's life, or even on an inanimate object (money, for example). When, therefore, by the methods I have described, an unconscious complex



becomes conscious, this libido becomes conscious too, but this time its object is not available. The method of psycho-analysis has itself divorced the libido from its former object. There is therefore a certain amount of libido, synonymously psychical energy, floating free, so to speak. What becomes of it? Such a state of affairs cannot possibly persist. It becomes attached to or fixated on the personality of the physician. This is a stage which must be attained by every patient, and is known as "the transference." To some extent a similar feeling of dependence and confidence occurs in every patient, whether he be suffering from heart disease, phthisis, cancer, or any other organic disease; but it is enormously exaggerated in a neuropath who is undergoing treatment.

All psycho-analysis proceeds via transference. Psycho-analysis means using transference for the purposes of treatment, it being the only way in which buried memories can be recovered. It is often difficult to see how on earth certain infantile fixated relationships can possibly be transferred to the physician, but the patient's unconscious mind discovers a way, usually with the help of a dream. When, as commonly happens, the infantile fixation is of a hostile nature, the patient's unconscious mind is most insulting to the physician, although superficially he is as polite as ever. Under such conditions, when the transference has been effected, it may be very disagreeable, and indeed dangerous. In patients suffering from delusions of persecutions for example, the patient then regards the physician as his persecutor. Jung of Zurich told me of a patient of his, who presented him on recovery with a loaded pistol which, during the stage of transference, was intended to be levelled at him. This is known as "negative transference." It must never be forgotten that during the transference the neurosis is as active as ever. There is a recrudescence of many of the symptoms of the former neurosis with the difference that some earlier person is replaced by the person of the physician. A similar transference on the part of the physician has to be guarded against ("reversed transference" it is called), and is to be avoided by self-analysis.

It is the commonest complaint of neurotic patients that they are not understood, but in the psycho-analyst they have found a man who listens sympathetically, tries to understand them and never gets annoyed by their constantly recurring resistances. The doctor has become a kind of father confessor who has

penetrated the secrets of his soul far deeper than any father confessor ever does, while the patient has found a prop against which he may lean for evermore. He considers the situation ideal and resists all attempts to alter it, even reverting to all his former phantasies in their new relationship.

This is the state in which the father confessor would leave him, but the psycho-analyst must place the patient upon his own feet. In other words, the next stage in the treatment is dissolution of the transference relation. This is the most difficult part of psycho-analysis, because the resistances are stronger than ever. It is to be accomplished in exactly the same way in which the transference relation was produced, viz., by psycho-analysis.

In this, dream interpretation will again play an important part, for it will now prove a useful guide in our search for the future object of the libido. We must find new interests for the patient and encourage him in them, so that he may come once more into practical relationship with the world around him. During this process all his symptoms crumble away, and, in the end, he finds himself neither better nor worse than other members of the community around him, but just a normal person.

## Abstracts

### ANATOMY.

#### ON THE RELATIONS OF THE INNER SURFACE OF THE (217) CRANIUM TO THE CRANIAL ASPECT OF THE BRAIN.

(The Sir John Struthers Anatomical lecture, delivered at the Royal College of Surgeons, Edinburgh, on the 16th December 1914.) J. SYMINGTON, *Edin. Med. Journ.*, 1915, xiv., Feb., p. 85.

THE subject, although of practical importance, has been rather overlooked, investigations hitherto having been mainly restricted to the relations of skull and scalp to fissures and gyri, and to deeper parts of the brain. The effect produced on the relative contour of skull and brain by the structures separating them has not been systematically studied, and interest in it has arisen lately in connection with prehistoric skulls. The research was carried out by the author by means of casts of the cranial cavity, both with and without the dura mater, and casts of the brain,

both with and without the pia mater and arachnoid. The material worked upon and the methods employed are explained.

The special points in connection with the *endo-cranial casts* are the general form of the cranial cavity as shown by the cast, the marks for the meningeal vessels and arachnoid granulations (Pacchionian bodies), the peculiarities in the effects produced by the venous sinuses and their relation to the discussions on the Piltdown skull, the variability of *impressiones digitatæ* and *juga cerebralia*, the distribution of the better marked ones, and the effect of some of the impressions on the exterior of the skull.

The *endo-dural casts* are compared with the endo-cranial casts, and their differences are explained, and attention is drawn to the relations and appearances of the dura mater in the immediate neighbourhood of the superior sagittal sinus and the horizontal part of the transverse sinus. Emphasis is laid on the size and distribution of the *lacunæ laterales*, the surgical importance of which has been shown by Sargent.

In *arachnoid casts* many sulci are obscured by the meninges, blood vessels, and cerebro-spinal fluid, especially at the vault, where the fluid is in greater amount, probably because the head is most often in the erect position, and the brain, with its higher specific gravity, sinks in the fluid. It is for this reason that digital impressions are better marked at the base of the skull.

Identification of fissures and sulci on a *brain cast* may be difficult, in the absence of the actual brain, for in some cases it may be necessary to open up the fissures to ascertain their relations to the concealed convoluted surface before they can be identified with certainty. Comparison of a brain or a brain cast with the corresponding skull or endo-cranial cast shows that the digital impressions and the ridges between them (*juga cerebralia*) on a skull are very unreliable guides to an estimate of the complexity of the convolutionary pattern of the corresponding brain. It is unlikely that casts of prehistoric skulls provide more information about corresponding brains than casts of modern skulls, and recent theories on the degree of development of the brain of ancient man, based on such casts, are probably of little value.

E. B. JAMIESON.

**ON THE OCCURRENCE OF A MONKEY-SLIT IN MAN.** C. T. (218) VAN VALKENBURG, *Proc. Konink. Akad. v. Wetensch. te Amsterdam*, 1913, Feb. (4 figs.).

**A NOTE ON THE SULCUS LUNATUS IN MAN.** DAVIDSON (219) BLACK, *Journ. Comp. Neurol.*, 1915, xxv., p. 129 (3 figs.).

IN 1903 Elliot Smith described a sulcus in the human brain, homologous to the so-called "Affenspalte" of apes, to which he

gave the name "sulcus occipitalis lunatus." The evidence upon which this conclusion was based was twofold—(1) on account of the essential similarity of the sulcal pattern in certain primitive Egyptian brains and in the brains of the great anthropoids; (2) because in apes the lunate sulcus forms the definite anterior limit of the area striata on the lateral surface of the occipital region, while in the Egyptian brains, though not invariably the case, this condition is not infrequently met.

Van Valkenburg bases his diagnosis of the sulcus lunatus on:—(1) The sulcus in question lies somewhat crescent-shaped (with its concavity caudad) or more transversal, not far from the occipital lobe; (2) in its lateral part terminates a sulcus that is often connected with the first temporal sulcus (sulcus præ-lunatus); (3) more or less parallel to it, more towards the front, lies a sulcus, into which the sulcus interparietalis terminates (sulcus occipitalis transversus); (4) the occipital extremity of the sulcus calcarinus falls (whether bent or not round the mantle-side) behind it, and sometimes extends between two sulci occipitales which are found there (they may be connected V-shaped).

Black wishes to add to this a fifth criterion, emphasised by Elliot Smith from the outset, namely, "the area striata never extends beyond the sulcus in question, though it may fall short of it; and its forward extension is in direct relation to the degree of operculation."

A. NINIAN BRUCE.

**SOME POINTS IN THE STRUCTURE OF THE CELLS OF THE**  
(220) **CEREBRAL AND CEREBELLAR CORTEX OF BIRDS.** (Sur quelques particularités de structure des cellules de l'écorce cérébrale et cérébelleuse chez les oiseaux.) G. MARINESCO and J. MINEA, *Compt. Rend. Soc. de Biol.*, 1914, lxxviii., May 14, p. 211.

THE writers conclude that the avian brain is distinguished from the mammalian by the absence of stratification, the presence of kinetic phenomena on the part of the nucleolus, and the formation of many nuclei and cell-colonies. These points show that the brain of birds has not yet reached a high degree of development in structure. The nuclei of the cerebellar Purkinje cells of flying birds are well differentiated, whereas those of terrestrial birds show morphological characters of a lesser degree of development.

LEONARD J. KIDD.

**A NEW FISH BRAIN FROM THE COAL MEASURES OF KANSAS,**  
(221) **WITH A REVIEW OF OTHER FOSSIL BRAINS.** Roy L.  
MOODIE, *Journ. Comp. Neurol.*, 1915, xxv., p. 135 (19 figs.).

THE soft parts of extinct animals may be preserved by a process of carbonisation or mummification, or they may be changed into a variety of mineral substances such as kaolin or phosphate, or the form of the part may be retained by a cast of the cavity which the organ occupied. The last is the manner of formation of the specimens of reptilian and mammalian brains here described.

The earliest vertebrate-like animals, the Ostracoderms, have preserved external sensory structures, such as sensory canals, lateral eyes, a pineal opening, and the opening of the endolymphatic duct. The brains of the fishes of the Mississippian and coal measures are very similar, being identical in a few details. Both types are characterised by very large optic lobes, which in the coal measures fish were due to the enormous eye. Nearly all parts of the coal measures brain are known, including some of the smaller nerves. The inner ear of one specimen is nearly completely preserved. The brain and ear are wholly unlike those of any modern fish, and no attempt is made at a direct comparison. There are several unusual features about the Paleozoic brains, such as a single median vagal lobe, the widely separated lateral lobes of the cerebellum, the large optic lobes, and the curious condition of the olfactory bulb or tract.

Among the Dinosaurs, all the available evidence points to a "lumbar brain," which was considerably in excess, in the mass of nervous tissue, of the cephalic brain. By this it is not intended to indicate that sensory functions were largely confined to the lumbar region.

The brain casts are dural casts, and do not repeat the smaller features of the cerebrum.

A. NINIAN BRUCE.

**THE PYRAMIDAL TRACT IN THE GUINEA-PIG (*Cavia aperea*).**  
(222) IDA L. REVELEY, *Anat. Record*, 1915, ix., April 20, p. 297  
(10 figs.).

THE motor area was removed in eight animals, and the resulting degeneration traced by the Marchi method. The decussation begins 1 mm. below the level of the calamus scriptorius, and ends near the junction of the medulla with the cord. All the fibres cross and most pass on into the funiculus cuneatus, where they turn caudalwards, although many end in the grey matter of the bulb in this region. As this dorsal column tract is followed downwards from segment to segment its outline changes, and

there is a gradual diminution in the number of fibres, most marked in the upper cervical and lower thoracic regions. The tract cannot be traced further than the fourth lumbar segment.

A. NINIAN BRUCE.

**VERTEBRAL COLUMN WITH SIX AND A HALF CERVICAL (223) AND THIRTEEN TRUE THORACIC VERTEBRÆ, WITH ASSOCIATED ABNORMALITIES OF THE CERVICAL SPINAL CORD AND NERVES.** JAMES C. BRASH, *Journ. Anat. and Physiol.*, 1915, xlix., April, p. 243 (14 figs.).

THE anomalies here described were found in a male subject, aged 61, and consisted in the absence of half a vertebra in the cervical region, and associated deficiency of spinal cord and nerve. The absent half vertebra must either be the third or the fourth, and it is proved from the arrangement of the nerves to be the fourth. It is suggested that the bone condition is secondary to the nerve abnormality, and from the external appearance of the roots, and the relative number of fibres contained in them, that a single nerve on the right corresponds to two on the left; and from the appearance of transverse sections of the cord that the single nerve is the fifth. The general conclusion is that there has been an error of segmentation, involving the suppression of half a segment in the cervical, and the addition of a whole segment in the thoracic regions; that the two are directly connected there is no evidence, but it is reasonable to suppose they are the effects of the same general cause.

A. NINIAN BRUCE.

## PHYSIOLOGY.

**ON INHIBITORY INFLAMMATORY SYMPTOMS.** (Über (224) *Hemmung inflammatorischer Symptome.*) HENRI BARDY, *Skandinav. Archiv f. Physiol.*, 1915, xxxii., S. 198.

THE author has carefully repeated and confirmed the experiments of Ninian Bruce upon the influence of the sensory peripheral nerves upon the hyperæmia present in the initial stages of inflammation, and confirms the correctness of the views there put forward that the sensory nerves bifurcate at their periphery, one limb terminating in the skin, the other in the blood vessel wall. The vasodilatation which occurs in the first stages of the inflammatory reaction may be explained as the result of an axon reflex limited to the two limbs of this bifurcation. This latter limb is considered by Bardy to form a synapse round a post-ganglionic sympathetic nerve cell in the vessel wall. He found that intra-

venous injection of a 2 per cent. solution of nicotine inhibits the inflammatory reaction in the eye. As extirpation of the superior cervical ganglion does not influence this reaction, the preganglionic neurone cannot be involved. Instillation of a 2 per cent. solution of nicotine into the conjunctival sac inhibits the reaction, as well as prevents blanching of the nictitating membrane on electrical stimulation of the sympathetic on the same side.

Adrenalin, dropped into the conjunctival sac, inhibits the reaction by its action on the nerve endings of the post-ganglionic nerve fibre in the blood vessel wall. It is also inhibited by ether narcosis if pushed until the corneal reflex disappears, and by numerous drugs such as quinine, antipyrin, sodium salicylate, &c. (*Cf. Review*, 1911, ix., p. 117, and 1912, x., p. 471.)

A. NINIAN BRUCE.

**A STUDY OF THE AFFERENT FIBRES OF THE BODY WALL  
(225) AND OF THE HIND LEGS TO THE CEREBELLUM OF  
THE DOG BY THE METHOD OF DEGENERATION.** GILBERT  
HORRAX, *Anat. Record*, 1915, ix., p. 307 (7 figs.).

THE only symptoms caused by a lesion of the spino-cerebellar tracts in the dog are those referable to a loss of muscle sense and tone. The symptoms were bilateral, and there was almost complete recovery in three weeks. These symptoms, in a lesion of the tracts at the level of the sixth thoracic spinal nerve root, are confined to the hind legs, and possibly the lower portions of the trunk.

The fasciculus spino-cerebellaris dorsalis, so far as its distribution in the cerebellar cortex is concerned, is confined to the caudal half of the vermis, and to the medial portion of the lateral hemispheres. The distribution of the fasciculus spino-cerebellaris ventralis in the cerebellar cortex is confined to the cephalic half of the vermis. There is no definite cerebellar centre for association regarding the hind legs. The cerebellar tracts are represented by crossed, as well as by direct, fibres in the dog.

A. NINIAN BRUCE.

**ON THE OCCURRENCE OF A PLASTIC FLEXOR TONE IN THE  
(226) MONKEY.** T. GRAHAM BROWN, *Journ. of Physiol.*, 1915, xlix.,  
p. 180.

SHERRINGTON has shown that in the state of cataleptic extensor rigidity which makes its appearance in the cat after the operation of decerebration, the extensor muscles of the limbs exhibit a tonic contraction which has a curious quality of plasticity. An extensor

muscle in the state of decerebrate rigidity tends to remain in any posture into which it is passively placed.

The author here shows that under certain circumstances a state of plastic flexor tone may also occur.

It is possible that these states of plastic and maintained flexion which occur from time to time in the monkey under chemical narcosis and in the decerebrate monkey are manifestations of the activity of the red nucleus.

A. NINIAN BRUCE.

**ON THE EFFECT OF ARTIFICIAL STIMULATION OF THE RED  
(227) NUCLEUS IN THE ANTHROPOID APE.** T. GRAHAM BROWN,  
*Journ. of Physiol.*, 1915, xlix., p. 185 (4 figs.).

A CHIMPANZEE, after decerebration, had its neuraxis cut across about 3 mm. above the anterior colliculi. The main effect of the stimulation of one red nucleus is a movement of flexion in the arm of the same side and a movement of extension in the opposite arm; these movements, having attained their maximum, tend to be maintained long after the cessation of the evocative stimulus. It was not determined whether this variation in the results on the two sides was due to a "spread" of current, *i.e.*, the reaction in a single arm might be a compound one conditioned by the effects on its spinal activities of two red nuclei. It might be a compromise between the flexion conditioned by the activity of the red nucleus of the one side and the extension conditioned by that of the opposite red nucleus. Varying values of stimulation might compound to give reactions in which extension and flexion exhibited different preponderances. The other possibility is that the activation of a single red nucleus is a mixed one, its chief action on the arm of the same side is one of flexion, but it also may have a weaker action of extension; and while its chief contralateral effect is one of extension, it also may have one of flexion. Then the different values of stimulation applied to one red nucleus might evoke reactions in which the extension and flexion factors had different intensities.

A. NINIAN BRUCE.

**NOTE ON THE PHYSIOLOGY OF THE BASAL GANGLIA AND  
(228) MID-BRAIN OF THE ANTHROPOID APE, ESPECIALLY IN  
REFERENCE TO THE ACT OF LAUGHTER.** T. GRAHAM  
BROWN, *Journ. of Physiol.*, 1915, xlix., p. 195.

THERE can be no doubt that electrical stimulation of structures, which probably lie in the caudal pole of the optic thalamus, yields alteration of the respiratory movements. These alterations have the characteristics of the similar alterations which, in the intact



animal, are associated with emotional states, *e.g.*, "panting," "sighing," "hollow" or the rapid "laughter" breathing. The exact and circumscribed location of the area from which this last type of alteration of respiration was obtained suggests the presence of a definite descending nerve tract, possibly the fasciculus retroflexus of Meynert. The fact that reactions may be so obtained, merely means that some link in the chain of mechanisms which normally take place in the state is being activated.

A. NINIAN BRUCE.

**ON THE ACTIVITIES OF THE CENTRAL NERVOUS SYSTEM**  
(229) **OF THE UNBORN FŒTUS OF THE CAT, WITH A DIS-**  
**CUSSION OF THE QUESTION WHETHER PROGRESSION**  
**(WALKING, &c.) IS A "LEARNED" COMPLEX.** T. GRAHAM  
BROWN, *Journ. of Physiol.*, 1915, xlix., p. 208.

If the fœtus of the cat be shelled out of the uterus without delay into warm physiological salt solution, it may be regarded as still unborn. In these circumstances unmistakable movements of progression may be obtained on producing asphyxia by pressure upon the umbilical cord. They may sometimes appear to arise spontaneously. Various reflexes are also found present, the limb reflexes being very similar to those of the adult cat. The mechanism for co-ordinate progression thus develops during intra-uterine life, the co-ordination of the mechanism not being conditioned after birth by a process of "learning." The rhythmic activity may be evoked by the general stimulus of asphyxiation before it has been evoked or conditioned by any rhythmic self-generated peripheral stimuli, such as those which play an important part in normal progression, but have been shown not to be its intrinsic factors.

A. NINIAN BRUCE.

## PSYCHOLOGY.

**OBJECTIVE JUDGMENT OF VALUE BY THORNDIKE'S SCALES.**  
(230) P. BOVET and S. CHEYSSOCHOOS, *Archiv. de Psychol.*, 1915, p. 365.

THORNDIKE and his pupils have undertaken the construction of various scales of value with the object of minimising the subjective element in the appreciation of scholastic tasks. The method adopted is as follows. A number of specimens of varying merit of the task for which the scale is desired, *e.g.*, handwriting, English composition, drawing, are procured. These are then submitted to the consideration of many judges, in one case more than 400, who have to consider each

specimen in relation to each of the others, judging it simply as better or worse. The votes are then tabulated, and a scale constructed. Thorndike allows a unit's difference of value between two specimens, one of which has been judged better than the other by 75 per cent. of the judges.

The writers criticise with force and justice the method of working out the numerical values appropriate to the different degrees in the scales. They consider, however, that the investigations have been fruitful in two very important respects. First, they have shown that in determinations of æsthetic and intellectual values there are not in reality very many degrees. Between very good and very bad there is a relatively short number of steps. In any special case the best number of degrees cannot be decided *a priori*, but it can be established by experiment. Second, the use of a scale in which types are given, corresponding to each degree, reduces in a very marked way differences of opinion among the judges dealing with certain given material.

In conclusion, the authors propose to require unanimity of opinion on the part of the judges to determine a unit of the scale. In a scale so made, the steps will evidently be wider apart, but there will be less probability of anyone using it going wrong.

MARGARET DRUMMOND.

## PATHOLOGY.

- MULTI-NUCLEATED NERVE CELLS IN THE BRAIN OF GENERAL PARALYTICS, AND ESPECIALLY IN A CASE OF JUVENILE GENERAL PARALYSIS.** (Sur l'existence de cellules nerveuses multinucléées dans le cerveau des paralytiques généraux et particulièrement dans un cas de paralysie générale juvénile.) G. MARINESCO and J. MINEA, *Compt. Rend. Soc. de Biol.*, 1915, lxxviii, May 14, p. 213.

IN all sections of the cerebellum of a case of juvenile general paralysis the authors found from two to ten bi-nucleated cells and exceptionally a tri-nucleated one. The nuclei were commonly more or less juxta-posed, and sometimes very close together, at others separated. Their shape varied from round, ovoid, reniform, to lenticular; and usually one was larger than the other. The cells showed no degeneration of the nucleus or cytoplasm, and no excess of pigment. The significance of multinucleated cells in organic psychoses is not well understood. One of the writers had seen bi-nucleated cells in the cerebral cortex apart from any psychosis. They incline to the belief that in general the presence of multi-nucleated cells in the human brain is connected

with an undeveloped condition, for similar cells are seen in the nerve centres during foetal life. Yet it is possible to admit, with Alzheimer and Kolb, that certain conditions may favour the production of nuclei after foetal life. LEONARD J. KIDD.

**PRESENCE OF THE *TREPONEMA PALLIDUM* IN A CASE OF**  
 (232) **SYPHILITIC MENINGITIS ASSOCIATED WITH GENERAL PARALYSIS AND IN A CASE OF GENERAL PARALYSIS.**  
 (Présence du *Treponema pallidum* dans un cas de méningite syphilitique associée à la paralysie générale et dans la paralysie générale.) G. MARINESCO and J. MINEA, *Rev. Neurol.*, 1913, xxi., p. 581 (2 figs.).

**PRESENCE OF *TREPONEMA PALLIDUM* IN THE BRAINS OF**  
 (233) **GENERAL PARALYTICS. (A propos de la présence du *Treponema pallidum* dans le cerveau des paralytiques généraux.)**  
 G. MARINESCO and J. MINEA, *Ibid.*, p. 661.

THE authors examined the cerebral cortex in twenty-six cases of general paralysis, and were able to discover the spirochæte in two. In the first there was in addition a syphilitic meningitis and the spirochætes were found either singly or in groups in the neighbourhood of the altered vessels. They were accompanied by plasma-cell infiltration and by neuroglia hyperplasia. The second case was that of a woman, aged 46, who presented typical symptoms of general paralysis. The spirochætes were found in large numbers in the cerebral cortex, especially in the grey matter. The lesions of general paralysis depend entirely upon the presence of these spirochætes.

The reason that salvarsan, mercury, &c., do not prove more beneficial in general paralysis is due to the fact that probably the spirochætes acquire a peculiar resistance during their development, by which they get quite different properties from the spirochætes present in a primary infection, *i.e.*, they become "toxо-resistant."

A. NINIAN BRUCE.

**NEUROBLASTOMA AND GANGLIO-NEUROMA OF THE SUPRA-**  
 (234) **RENAL BODY. JOHN SHAW DUNN, *Journ. Path. and Bacteriol.*, 1915, xix., April, p. 456 (13 figs.).**

*Case 1.*—A boy, aged 14, died after an illness of three months' duration, characterised by wasting, pain in the back, ascites, and great enlargement of the liver. At the autopsy a large tumour measuring 15 cm. long, 10 cm. broad, and 7 cm. thick was found occupying the site of the right suprarenal body. No metastases were present, except in the lymphatic glands. On section it was

found to consist of small round cells with dark nuclei and almost no protoplasm, but accompanied by varying amounts of fine fibrillar material. These fibrils were often aggregated into slender strands, and were occasionally surrounded by a fairly definite ring of small cells giving a rosette appearance.

*Case 2.*—Patient, aged 4½, suffered from general symptoms, weakness, pallor, and loss of weight. A large tumour was found occupying the site of the left suprarenal body. Metastases were numerous, especially in the bones. On section, the tumour was found to be composed of numerous large cells resembling ganglion cells with a groundwork of fibrillar material. With Nissl's stain, tigroid substance was recognisable in many cells. The fibrillar material appeared to be formed of naked axis cylinders, the sheath of Schwann not being present. The growth appeared to originate in the medulla of the suprarenal, which is entirely formed from neuroblastic tissue.

Genuine tumours composed of ganglionic nerve cells and their processes are rare. They represent new growth of the most highly specialised cells of the body, cells which apparently never undergo division in normal circumstances, and which seem, therefore, less likely to exhibit neoplastic development.

The author tabulates previously recorded cases of ganglio-neuromata, of which 41 occurred in the sympathetic nervous system (4 in the cervical segment, 5 in the thoracic segment, 19 in the abdominal segment of the chain and in branches, 11 in the suprarenal bodies, and 2 in the subcutaneous tissues), 4 in the central nervous system, and 6 in the peripheral nerves. The evidence seems to indicate that both forms of tumour are derived from residues of neuroblastic tissue which have become dislodged from their natural place in the scheme of development of the nervous system. If the residual cells retain their original embryonic form, a malignant tumour results—a neuroblastoma. On the other hand, the separated cells may continue to develop in a fairly normal fashion, so as to produce a tumour of ganglion cells—a ganglio-neuroma.

A. NINIAN BRUCE.

**RAPID IMPREGNATION (BIELSCHOWSKI SIMPLIFIED) AND  
(235) REGRESSIVE METHODS IN THE IMPREGNATION.**

(*Imprégnation rapide (Bielschowski simplifié) et méthode régressive dans imprégnation.*) A. SHUNDA, *Rev. Neurol.*, 1913, xxi., p. 204.

In this modification of Bielschowski's impregnation method the penetration of the tissue by the silver is favoured, and the whole procedure thereby hastened, by being carried out at a temperature

varying from 40°-70° C., instead of in the cold. The steps of this simplified process are as follows:—

The sections remain for fifteen or twenty minutes in the ammonia solution at room temperature, and are then transferred direct to the warm (60°-70°) silver nitrate solution. In a few moments they take on a yellow tint, which passes through orange to brown, and in from five to ten minutes is sufficiently deep. The sections are then washed in distilled water, and placed for a few seconds in a cold (20 per cent.) formal solution. The subsequent toning in the gold bath, to which a few drops of phosphoric acid have been added, is also carried out in the heat, and requires from ten to fifteen minutes. The sections now acquire a beautiful red, purple, or violet shade; they are then placed for twenty seconds in hyposulphite solution and washed in water. Final traces of the hyposulphite may be removed by immersion in permanganate of potash solution (1 per cent.) for five minutes, decolorising in 5 per cent. oxalic acid solution, and rinsing in several waters.

By the above method preparations can be obtained in less than an hour, instead of the two days required for Bielschowski's original method.

The depth of the impregnation can be regulated by the time in the warm silver bath; if too intense, this may be reduced by a variety of methods. The best results are obtained by a mixture consisting of one part of solution of molybdate of ammonia (7 per cent.) and three parts of ammonia (10 per cent.). This regressive decolorisation must be controlled under the microscope, and the sections passed through several waters to get rid of the molybdate.

JAMES W. DAWSON.

#### **RAPID METHOD FOR COMBINED STAINING OF MYELINATED**

(236) **FIBRES AND NERVE CELLS.** (*Procédé rapide pour la coloration combinée des fibres à myéline et des cellules nerveuses.*) A. PERELMANN, *Rev. Neurol.*, 1913, xxi., p. 523.

THE tissue is fixed in 10 per cent. formalin for twenty-four to forty-eight hours. It is then washed in water, dehydrated, and embedded in paraffin. Sections are cut from 6 to 10  $\mu$  thick, fixed on glass slides, and carried through xylol and alcohol to water. The slides are then placed in a solution of 4 per cent. potassium bichromate and kept at a temperature of 55°-60° for three or four days. They are then washed in distilled water and stained with Kultschitzky's hæmatoxylin for an hour at a temperature of 55°-60°. Wash now with distilled water, differentiate with freshly prepared potassium permanganate solution for one to

three minutes, and decolorise with Pal's solution. Wash in repeated changes of distilled water for an hour, and stain with hæmalum for twenty minutes. Wash again with water, stain for a few minutes with eosine, and after dehydrating, mount in balsam.

By this method medullated fibres are stained blue, cell protoplasm red, and nuclei violet. The finer fibres also stain well.

A. NINIAN BRUCE.

**THE LIPOIDS OF ANCIENT EGYPTIAN BRAINS AND THE  
(237) NATURE OF CHOLESTERYL ESTERS.** A. LAPWORTH and  
F. A. ROYLE, *Journ. of Path. and Bact.*, 1915, xix., April, p. 474.

"THE existence of only one series of esters of cholesterol with fatty acids has been established. The chlorides of the higher fatty acids, when heated with cholesterol at moderate temperatures, yield esters; above 350°, however, they yield aliphatic ketones. The cholesterol of ancient Egyptian brains is present mainly in the form of esters, as stated by Mair. No appreciable quantity of the higher fatty ketones is to be found in them."

A. NINIAN BRUCE.

## CLINICAL NEUROLOGY.

**THE OCULO-CARDIAC REFLEX.** E. B. GUNSON, *Brit. Journ. Child.  
(238) Dis.*, 1915, xii., p. 97.

GUNSON reviews the literature and records his personal observations on ocular compression in fifty cases of diphtheria and twenty-five of scarlet fever.

He found that the reflex was positive in about 92 per cent. of the cases. In about 8 per cent., who were children of a naturally nervous disposition, it was negative. In some patients the reflex was negative during pyrexia. In cases of "cardiac paralysis" in diphtheria the reflex was negative, and remained so till death in fatal cases; in cases which recovered, it became positive when the heart returned to its normal state. According to Gunson, the claim that the reflex is of diagnostic value in differentiating cardiac failure due to myocardial lesions from that due to nervous lesions, presumes the independence of the nervous and muscular functions of the heart, and cannot be substantiated. The reflex is of some value in confirming the nervous origin of the great majority of post-febrile bradycardias, and in differentiating them from cases of auriculo-ventricular heart block. (*Cf. Review*, 1914, xii., pp. 254, 261, and 311.)

J. D. ROLLESTON.

**A NEW REFLEX IN A SUBJECT PRESENTING A CEREBELLAR**

(239) **SYNDROME.** (Un nouveau réflexe chez un sujet présentant un syndrome cérébelleux.) MARIANO R. CASTEX, *Rev. Neurol.*, 1913, xxi., Nov. 15, p. 517.

A MAN, aged 26, who presented symptoms which were diagnosed as due to a cerebral tumour in the posterior cranial fossa, showed the following reflex:—If the sole of the foot were stroked with a pin in the usual way to elicit Babinski's reflex, it was found that there resulted a contraction of the contralateral ileopsoas, sartorius, and sometimes of the quadriceps, causing flexion of the thigh on the pelvis. The reflex could be elicited equally easily on both sides, although sensibility for touch, heat, and pain was absent on the left side and diminished on the right.

A. NINIAN BRUCE.

**SOME "MINOR SIGNS" OF ORGANIC PARALYSIS.** (Sur quelque

(240) "Petits Signes" des parésies organiques.) G. MINGAZZINI, *Rev. Neurol.*, 1913, xxi., p. 469 (3 figs.).

**ADDITIONAL REMARKS ON "SOME MINOR SIGNS OF**

(241) **ORGANIC PARALYSIS."** (Remarque additionnelle à ma note "sur quelques petits signes des parésies organiques.") G. MINGAZZINI, *Ibid.*, p. 668.

FOUR such signs are described:—

(1) The *orbiculo-palpebral sign*. The patient closes both eyes firmly. The examiner then places the palmer surface of one thumb above the eye and the other below, and tries to open the eye. If a slight paralysis be present, it will be found easier to open the eye on the same side. This sign must not be relied on if conjunctivitis or œdema are present.

(2) The *orbiculo-labial sign*. The patient is made to shut his mouth tightly, and the examiner, in the same way as before, tries to separate first one corner and then the other. The resistance is less on the paralysed side. This sign is more frequently met with than the first.

(3) The patient is made to hold out both arms straight in front of him, with his eyes shut. After about a minute or so the arm on the affected side tends to drop sooner than the other or to oscillate from side to side.

(4) The patient lies on his back and raises both lower limbs to an angle of 45°. After a minute or two, the limb on the affected side again drops first or oscillates.

In the second paper Mingazzini points out that he has just discovered that the first two signs had been previously described by Oppenheim in his well-known text-book (1913).

A. NINIAN BRUCE.

**PRIMARY PROGRESSIVE MYOPATHY IN TWO BROTHERS,**  
 (242) **WITH AUTOPSY.** (*Myopathie primitive progressive chez deux frères avec autopsie.*) P. HAUSHALTER, *Rev. Neurol.*, 1913, xxi., p. 587.

*Case I.*—Boy, aged 13 years, remained in good health till the age of 7, when he fractured his thigh. The muscular atrophy involved the muscles of the thorax, of the shoulder girdle, and of the upper extremity, while the muscles of the dorso-lumbar region were flattened, but those of the lower extremity appeared relatively unaffected, although the electrical reactions showed a slight reaction of degeneration. Sensation was normal. Death occurred at the age of 15 from broncho-pneumonia.

*Case II.*—Boy, aged 10 years, showed a typical picture of pseudo-hypertrophic muscular atrophy, with typical manner of rising, &c. The calf muscles showed the characteristic muscular pseudo-hypertrophy, with atrophy of the back muscles and of the shoulder girdle and arm muscles. Death occurred at 14 years from pneumonia. A reaction of degeneration was present.

There had been seven children in the family. Three died in childhood from "meningitis," and two others survived and were unaffected.

The muscles in both cases showed the usual changes, the first case showing in addition a fibroid patch in the myocardium. Although a reaction of degeneration was present in the second case, the nervous system was found free from lesions. The first case was considered to be of the Leyden-Möbius type.

A. NINIAN BRUCE.

**TROPHIC DISTURBANCES OF TRAUMATIC ORIGIN. ATROPHY**  
 (243) **OF THE HAND WITH DECALCIFICATION OF THE BONES, FOLLOWING A FRACTURE OF THE FIRST PHALANX OF THE LITTLE FINGER.** (*Troubles trophiques d'origine traumatique. Atrophie de la main avec décalcification des os, consécutive à une fracture de la première phalange du petit doigt.*) ANDRÉ-THOMAS and H. LEBON, *Rev. Neurol.*, 1913, xxi., p. 357.

A WOMAN, aged 38, received a severe blow on the little finger of the left hand. It became swollen and was so painful that she could not allow it to be touched. A fracture of the first phalanx was recognised, and kept in a splint for a fortnight. On removing the splint the little and fourth fingers could not be moved and were still painful. The patient, however, continued to use her hand in spite of this until the whole hand became swollen and painful. On examination the whole hand was now found to be



much smaller than the other, and the forearm also showed a similar, though less marked, change. An X-ray showed decalcification of the bones of the hand, wrist, and lower ends of the radius and ulna. The muscles showed no reaction of degeneration, the reflexes were exaggerated, and the nerve trunks not specially tender. The condition did not appear to be due to atrophy from disuse, neither was it considered to be the result of an ascending neuritis. It was, therefore, ascribed to some reflex trophic change.

A. NINIAN BRUCE.

#### **CASES OF INFLUENZAL AND PNEUMOCOCCAL MENINGITIS.**

(244) J. BURTON CLELAND and E. W. FERGUSON, *Med. Journ. Australia*, 1915, i., April 3, p. 308.

MENTION is made here of two cases of each of the above conditions, in which the organisms were discovered in smears from the pus at the base of the brain.

A. NINIAN BRUCE.

#### **SUBACUTE HÆMORRHAGIC POLIOENCEPHALITIS OF WERNICKE,**

(245) **NICKE, WITH SYNDROME OF THE RED NUCLEUS. MODIFICATIONS OF THE CEREBRO-SPINAL FLUID AND OTITIC COMPLICATIONS.** (Polioencéphalite subaiguë hémorragique de Wernicke avec le syndrome du noyau rouge. Modifications du liquide céphalo-rachidien et complications otiques.) EGAS MONIZ, *Rev. Neurol.*, 1915, xxii., Avril, p. 237.

A MAN, aged 31, developed suddenly almost complete ptosis of both eyes while working in the fields on an intensely hot day. There followed slight headache, delirium, tendency to fall to the left, complete bilateral paralyses of the third and fourth nerves, slight nystagmus, unequal pupils, and absence of reflex for light accommodation and convergence. The plantar reflexes were normal, as were also the knee and Achilles jerks. Sensation was unaffected. Movements with the right hand were normal, with the left hand there was marked ataxia, as also with the left leg. Lumbar puncture was performed on four occasions: at the beginning of the illness it was normal, later it became yellow and contained a large number of red blood corpuscles, while when the symptoms began to improve the number of blood corpuscles diminished and a lymphocytosis appeared. The Wassermann reaction was negative, and there was no alcoholic history. He grew worse, and showed slight involvement of his right sixth and seventh nerves. As a boy he had had measles, followed by bilateral otitis and deafness, and during this illness the present left ear began to discharge profusely, followed later by a slight

discharge from his right ear. After this steady improvement resulted.

The bilateral paralysis of the third and fourth nerves, with slight involvement of the right sixth and seventh, the cerebellar hemiataxia, with left lateropulsion and other symptoms, all point to a hæmorrhagic inflammatory process in the neighbourhood of the red nucleus and of the superior cerebellar peduncles.

A. NINIAN BRUCE.

**SUBACUTE ENCEPHALITIS IN A BOY NINE YEARS OLD.**

(246) (*Encéphalite à évolution subaiguë chez un garçon de neuf ans.*)

J. KÆLICHEN and J. SKODOWSKI, *Rev. Neurol.*, 1913, xxi., p. 153.

A BOY, aged 9, developed nasal speech, followed shortly by slight paralysis of the right hand. On examination a few days later a bilateral facial weakness was detected, with paralysis of the soft palate and vocal cords, and the paralysis of the right hand had become complete. The right leg next gradually became completely paralysed, and a slight degree of ataxia was noticed in the left upper limb. Babinski's sign was positive on the right side and later on the left. His voice became gradually more and more indistinct, until finally it disappeared. The Wassermann reaction was negative in the blood. There was no headache, no nystagmus, and the pupils reacted to light and to accommodation. After the spontaneous rupture of a pharyngeal abscess, the symptoms began to improve, and were not influenced by a feverish attack which lasted a week, but passed off with salicylate of soda.

As the illness was accompanied by fever, and an erythematous eruption occurred towards the end, there was undoubtedly some microbic influence at work, which produced an inflammatory process in both cerebral hemispheres. The point of entry probably was the tonsils, followed by the development of a pharyngeal abscess, and spread into the brain. Encephalitis in children is usually very acute, and this case is of special interest from the fact that the condition developed gradually, lasted about six weeks, and was characterised by the progressive development of fresh symptoms without any general involvement. A diagnosis of disseminated sclerosis was considered inadmissible.

A. NINIAN BRUCE.

**A CASE OF CEREBELLAR ABSCESS IN A CHILD, NOT**

(247) **ARISING FROM EAR TROUBLE.** H. T. ASHBY, *Brit. Journ.*

*Child. Dis.*, 1915, xii., p. 105.

A RECORD of a case in a girl, aged 4 years, in whom the diagnosis of tuberculous meningitis was made during life, in spite of an

almost normal cerebro-spinal fluid and a normal temperature. On admission to hospital, five weeks before death, she had bronchitis, which may have been the starting point of the trouble. The only localising signs during life had been the continual tendency to lie on the right side, and a convulsion chiefly affecting the right side. The autopsy showed a large abscess in the right lobe of the cerebellum; the pus contained pneumococci. J. D. ROLLESTON.

**BRAIN ABSCESS IN A CASE OF PARATYPHOID B.** R. L. SCOTT,  
(248) *Lancet*, 1915, clxxxviii., April 24, p. 852.

A SOLDIER, aged 21 years, was admitted to hospital on 3rd February with symptoms resembling typhoid fever. The blood was sterile, and no organism of the typhoid group could be isolated from the urine or faeces. On 8th February he developed a left hemiplegia with involvement of the face and tongue of the same side. He complained of pain in the right temporal region, and at the back of the right ear. A diagnosis of temporo-sphenoidal abscess was made, and it was decided to trephine. The patient, however, collapsed under the anaesthetic. Lumbar puncture gave issue to a clear fluid, not under tension and sterile.

At the autopsy a general hyperplasia of the lymphadenoid tissue was found with acute ulceration of the lower two feet of the ileum and adjacent part of the caecum, but not typical of either typhoid or tubercle. The right cerebral hemisphere was oedematous, and on section showed an abscess about the size of a shilling embedded in the outer and posterior aspect of the right optic thalamus. The adjacent limb of the right internal capsule was destroyed. A non-motile, Gram-negative bacillus which gave the reactions for paratyphoid B, was obtained in pure culture from the spleen.

A. NINIAN BRUCE.

**ABSCESS OF THE PARIETAL LOBE. HEMIANÆSTHESIA.**  
(249) **DYSMETRIA AND BRADYKINESIA, ASYNERGY AND**  
**APRAXIA.** (Absès du lobe pariétal. Hémianesthésie.  
Dyametrie et bradykinésie, Asynergie, apraxie. Perturbation  
des fonctions d'arrêt.) ANDRÉ-THOMAS, *Rev. Neurol.*, 1913, xxi.,  
p. 637 (5 figs.).

A BOY, aged 18 years, developed weakness of the right arm after a fall while playing at football. Although the right leg was also slightly affected, only a slight degree of paralysis developed, but sensation was affected over the whole of the right side of the

body. Touch, localisation, and the sense of position and movement were most affected, while the sense of heat, cold, pain, and vibration were more or less preserved. Astereognosis was marked in the right hand. Associated movements were well developed, *e.g.*, closure of the right hand was accompanied by closure of the left hand, and closure of the eyes was accompanied by closure of the right hand, although not of the left. There was neither aphasia nor apraxia. Lumbar puncture gave issue to a fluid not under tension, without albumen, but reducing Fehling's solution. Double optic neuritis developed, and he became gradually worse, dying about a month after the original injury.

At the autopsy an abscess about the size of a small orange was found at the level of the left superior parietal lobe, full of yellow pus. The organism was not determined. The abscess cavity stretched from the inner to the outer wall of the parietal lobe, and as far down as the supramarginal gyrus, and showed a diverticulum involving the corpus callosum. There was no opening into the lateral ventricle nor on to the surface of the brain, no other purulent focus could be discovered, and there was no meningitis.

There was no doubt that the diagnosis was a lesion in the left parietal lobe, and it is interesting to note that the optic neuritis was most marked in the left eye. The relation of sensory symptoms to parietal lobe lesions on the opposite side are discussed at some length.

A. NINIAN BRUCE.

**AN AUTOPSY ON A CASE OF TUMOUR OF THE CEREBELLO-PONTINE ANGLE, THREE YEARS AFTER AN OPERATION FOR DECOMPRESSION.** (*A propos d'une autopsie de tumeur de l'angle ponto-cérébelleux, pratiquée trois ans après une opération décompressive.*) J. JUMENTIÉ, *Rev. Neurol.*, 1913, xxi., p. 474.

A MAN, aged 49, presented the following symptoms:—Violent headache, giddiness, diplopia, feebleness in the lower limbs, difficulty in walking, with tendency to turn to the left side, double optic neuritis, nystagmus, unequal pupils, paralysis of the left sixth nerve, deafness on the left side, and great excitement. An operation for decompression was performed over the posterior part of the cerebellum on the left side. A cerebellar hernia resulted, but the headache, giddiness, and mental symptoms passed away.

The patient died about three years later, and at the autopsy it was found that the left cerebellar hemisphere had been almost completely destroyed by the tumour. The case is interesting on account of the fact that, although half of the cerebellum had

been destroyed, the symptoms were not nearly so severe as might have been expected. The early development and persistence of deafness is of value in the diagnosis of tumours in this region. A decompressive operation is of particular importance in such cases, as, by allowing room for the tumour to extend outwards, it prevents pressure on the pons Varolii and closure of the fourth ventricle. The absence of hemiplegia and hemianæsthesia in this case was due to the fact that the tumour had not infiltrated the pons.

A. NINIAN BRUCE.

**SUBCORTICAL TUMOUR OF THE PREFRONTAL LOBES  
(251) AND OF THE RIGHT INFERIOR PARIETAL LOBULE.**

(Tumeur sous-corticale des lobes préfrontaux et du lobule pariétal inférieur droit.) C.-F. ZANELLI, *Rev. Neurol.*, 1913, xxi., p. 573.

THE patient was a man, aged 43, who began to suffer from right frontal and occipital headaches. They disappeared for a time, and then suddenly reappeared with giddiness and vomiting. He became taciturn, lost his memory for recent events, and general weakness developed with left hemiparesis, involving also the lower distribution of the facial nerve. On examination the following points were noted:—Rotation of the head to the right, tenderness on percussing the right side of the head, loss of deep sensibility and astereognosis on the left side, optic neuritis, and general mental apathy.

Antisymphilitic treatment proved of no benefit. The temperature was always normal, and a sarcoma or gliosarcoma of slow and progressive growth was diagnosed in the superior parietal lobe. Operation was attempted over the parietal region, but the tumour was found to be subcortical. At the autopsy two separate tumours were found. The first was situated in both prefrontal lobes, and involved the corpus callosum. The second involved the right inferior parietal lobe. Both were sarcoma.

This case illustrates the difficulty (1) in the diagnosis of multiple tumours of the brain, and (2) of distinguishing between a cortical and a subcortical tumour when it is situated in the parietal lobe.

A. NINIAN BRUCE.

**NOTES OF A CASE OF TUMOUR OF THE AUDITORY NERVE.**

(252) R. E. SHUTER, *Med. Journ. Australia*, 1915, i., Feb. 27, p. 192.

A MAN, aged 43, became deaf in his right ear, followed shortly by attacks of dizziness, which, later, became constant. He could not walk without staggering, but had no tendency to fall in any

definite direction. He had no headache. Later, a slight tendency to fall to the right was noticed. Horizontal spontaneous nystagmus was present both to the right and left, with a vertical nystagmus upwards, but not downwards. When the conjunctiva of the right eye was stroked gently with cotton wool, the contraction of the orbicularis was not as active as that of the left. Co-ordination in the right upper limb was distinctly disturbed. A careful examination of the ears enabled a positive diagnosis to be made before the operation. The tumour was as large as a walnut, and was adherent to the *pars petrosa*, posterior to the internal meatus, and had pressed upon and flattened the whole anterior part of the right lateral lobe of the cerebellum. It proved to be a glioma.

A. NINIAN BRUCE.

**AN ENDOTHELIOMATOUS CEREBRAL TUMOUR.** J. E. PIPER, (253) *Med. Journ. Australia*, 1915, i., April 17, p. 354.

THE symptoms began with failure of vision in both eyes, followed by severe headache, vomiting, occasional fits, loss of memory, and optic neuritis. The patient had had syphilis twelve years previously, but neither mercurial inunction nor potassium iodide were of any use, and a decompression operation was performed in the right fronto-temporal region. He was not much benefited. It was noticed loss of smell followed the operation. A cerebral hernia developed, but never any signs of interference with the pyramidal tracts. He died suddenly.

At the autopsy a tumour was found growing from the meninges over the lesser wing of the sphenoid. It had not invaded the brain substance, and was situated mostly under the left frontal lobe. It proved to be an endothelioma. The hernia contained soft cystic brain matter.

A. NINIAN BRUCE.

**ON HYPOPHYSO-GENITAL DYSTROPHY.** (Contributo alla conoscenza della distrofia ipofiso-genitale.) G. MATTIROLLO, *Riv. di Patol. nerv. e. ment.*, 1914, xix., p. 513.

A RECORD of three cases. The first two, a woman aged 32, and a man aged 36, both showed signs of a cerebral tumour localised in the hypophysis, associated with the classical symptoms of Fröhlich's syndrome. Post-mortem examination of the first case showed that the tumour was an adenoma. In the second case a necropsy was not obtained.

The remarkable features of the cases were:—

1. The long duration of the disease—ten years in the first case, and seven years in the second.

2. The preservation of the anterior glandular lobe in the first case, although it was completely surrounded by the tumour, while every trace of the posterior lobe had disappeared.

In the third case, a man aged 32 showed no signs of a cerebral tumour, and appears to have been an example of the syndrome attributed to pluriglandular lesions, and described by Gandy under the name of "retrograde infantilism" (*v. Review*, 1911, ix., pp. 393 and 515). In this case diabetes insipidus preceded the sexual retrogression, and the development of adiposity.

J. D. ROLLESTON.

**A CASE OF FACIAL HEMIATROPHY WITH A CONTRA-**  
(255) **LATERAL ARGYLL ROBERTSON SIGN.** (*Sur un cas*  
*d'hémiatrophie faciale avec signe d'Argyll Robertson contra-*  
*lateral.*) J. W. LANGELAAN, *Rev. Neurol.*, 1913, xxi., p. 520.

A BOY, aged 11 years, developed a left-sided facial hemiatrophy, affecting chiefly the superior maxilla and adjacent parts. It appeared to have been produced very slowly. The teeth on the affected side were smaller than on the normal. The left eye was normal in every way, but the right pupil was extremely dilated, and the reaction to light was completely absent. The reaction to accommodation was present, although a little slow. The right eye showed nystagmus both to the right and to the left. The left eye was normal. The left arm was also a little shorter than the right, and showed slight athetotic movements, which were not altogether absent from the right arm. The Wassermann reaction in the blood was negative.

The author attributes the condition to a lesion in the central sympathetic tract in the grey matter of the floor of the fourth ventricle and round the aqueduct of Sylvius.

A. NINIAN BRUCE.

**ON IDIOGLOSSIA: WITH AN ACCOUNT OF A CASE.** W. B.  
(256) DRUMMOND, *Brit. Med. Journ.*, 1915, April 17, p. 670.

THE patient was a boy, 13 years and 9 months old, and of average intelligence. When he was first examined he mispronounced twelve letters in the alphabet. These were as follows: C—he, F—ech, H—aick, I—oi, L—ai, Q—kay, S—ech, V—oo, W—do'er, X—ech, Y—oi, Z—he'd. His speech generally was quite unintelligible.

As the patient had failed to learn correct articulation by the ear, he was taught by eye. The various sounds were taken up *seriatim*, more or less in accordance with their arrangement in Professor Wyllie's physiological alphabet, and the boy was shown

how to reproduce them as is done in teaching deaf mutes to speak. Two months after treatment was begun the boy could speak quite intelligibly to anyone.

The visual memory in this case, and the power to concentrate the attention, were good. On the other hand, the auditory memory was poor, and the patient had little or no ear for music.

The symptoms in this case support the view that in idioglossia the peculiar speech is neither a persistence of baby language nor a new tongue invented by the patient. The child's speech really represents a very defective attempt to speak his own mother tongue. The defect does not arise from any impediment in the articulatory mechanism; nor to want of intelligence; nor to lack of visual memory; nor to inattention, though this may be noticed in some cases; nor to deafness in the ordinary sense. But the symptoms are explicable on the theory that there is defective audition in the sense of some affection or imperfect development of the auditory word centre. Idioglossia would thus come under the same class of cases as congenital word-blindness. But if so, why should the former condition be readily curable (in the case of an intelligent and industrious subject), while the latter is extremely intractable or even incurable, although the intelligence of the patient may be quite normal? The explanation seems to be as follows: In cases of congenital word-blindness the word-seeing centre in the brain fails to develop under the stimulating influence, successful in the case of all normal children, of school lessons. But an efficient word-seeing centre is absolutely essential for reading, and if the affected child's reading centre has not sufficient latent capacity to undergo the normal course of development, even under the stimulation of individual tuition and prolonged effort, the case is hopeless. The child cannot learn to read because he cannot develop a reading centre. In a case, on the other hand, of idioglossia the defect in the audition centre does not interfere with the child's hearing nor with his capacity to understand what he hears, but it does incapacitate him from reproducing by ear, as normal children do, the sounds transmitted to his ear. It may even incapacitate him from learning how to reproduce such sounds by ear, just as the word-blind is incapacitated from recognising, or even in some cases from learning to recognise, word symbols by sight. But in order to teach a child with idioglossia to speak it is not necessary to provide him with a complete audition centre. There are several ways of speaking, and if the child with a defective audition centre cannot learn to speak correctly by ear, he may learn to speak by the intelligent utilisation of visual or kinæsthetic memories.

It may be impossible for him to learn to reproduce words correctly by means of his auditory memory, but if he cannot learn



to pronounce words as they sound, he may yet learn to pronounce them as they look, not merely in books, but also as they appear on the lips of other people. In this case there is no reason to suppose that the original defect of audition has been cured; for, although the boy can now talk quite fluently and intelligibly when he is expressing his own thoughts, he cannot echo immediately an unusual word. If one says to him unexpectedly, "Say 'mathematics,'" he has to consider what the parts of the word are, and how the proper sounds have to be produced before he can tackle the word successfully. When he has got the word correctly syllable by syllable, he has then no difficulty in repeating the whole word as fluently as a normal person.

AUTHOR'S ABSTRACT.

**POLYNEURITIS ASSOCIATED WITH "OPHTHALMOPLÉGIA (257) TOTALIS EXTERNA BILATERALIS."** (*Polinevrite associata ad "ophthalmoplegia totalis externa bilateralis."*) G. FUMAROLA, *Riv. di Patol. nerv. e. ment.*, 1915, xx., p. 1.

A RECORD of a case in a non-syphilitic wine-drinker, aged 53. The symptoms first developed in 1907, and slowly increased during the following years, until in 1913 the polyneuritis was generalised.

General paralysis, tabes, disseminated sclerosis, anyotrophic lateral sclerosis, syringomyelia, and cerebro-spinal syphilis could all be excluded from the diagnosis.

In April 1914, considerable improvement had taken place, but the ophthalmoplegia persisted.

J. D. ROLLESTON.

**ZONIFORM SYPHILIDE OF THE THORAX.** (*Un cas de syphilide (258) zoniforme du thorax.*) PAYENVILLE and DUCHEX, *Bull. Soc. de méd. de Rouen*, 1913, lii., p. 148.

A MAN, aged 28, who had contracted syphilis a year previously and had had no treatment, developed severe attacks of headache lasting from twenty-four to forty-eight hours, and at the same time girdle pains in the lumbar region, and sphincter troubles, sometimes incontinence, and at other times retention. These symptoms gradually improved, but a small papular eruption appeared in the right flank, and in the course of six months extended half way round the trunk at the level of the fourth intercostal space to a little above the umbilicus. The cerebro-spinal fluid showed a very slight lymphocytosis, but no meningeal reaction, properly speaking. It was possible, however, that at the time of the attacks of headache, sphincter trouble, and girdle pains, there had been a meningeal infection, which was subsequently localised to the spinal roots.

No symptoms of tabes were present.

J. D. ROLLESTON.

**A CASE OF DEATH AFTER A CONCENTRATED INJECTION OF**  
 (259) **NEOSALVARSAN.** (*Un cas de mort après une injection de*  
*néosalvarsan à forte concentration.*) JULES MORAWSKI, *Rev.*  
*Neurol.*, 1915, xxii., Avril, p. 242.

A MAN, aged 51, alcoholic, presented all the symptoms of general paralysis. The Wassermann reaction was positive in the blood, and there was a history of syphilitic infection thirteen years previously. On 26th January he was given an intravenous injection of 0.3 gm. neosalvarsan in 2 c.c. of distilled sterilised water. On 30th January he was given a second intravenous injection of 0.45 gm. neosalvarsan in 2 c.c. of sterilised distilled water. Twenty-four hours later he suddenly lost consciousness for half an hour, with rapid pulse and irregular breathing. Next day he was very ill, and he died the afternoon of 2nd February. There was no autopsy. Altogether he had received 0.75 gm. of neosalvarsan. The author attributes the result to vascular degeneration, with peripheral arteriosclerosis in a syphilitic and alcoholic case, and considers it is not wise to give salvarsan in cases of general paralysis exhibiting vascular degeneration.

A. NINIAN BRUCE.

**FUNCTIONAL DYSPHASIAS. HOW TO STUDY STAMMERING.**  
 (260) (*Les dysphasies fonctionnelles. Comment étudier les bégaiements.*) HENRY MEIGE, *Rev. Neurol.*, 1913, xxi., p. 653.

THE author applies the term "dysphasia" to the difficulty in speech usually somewhat loosely referred to as stammering. These he divides into four kinds:—

(1) *Polysyllabic dysphasia*, or dysphasia by repetition, in which certain syllables only are repeated.

(2) *Clonic dysphasia*, where the repetitions are more brusque and convulsive, and are accompanied by clonic movements of the head and limbs.

(3) *Tonic dysphasia*, where the speech is prevented by the length of the muscular contraction ("stammering" in English).

(4) *Atonic dysphasia*, where there is a definite verbal inertia and inhibition of speech.

The motor mechanism of speech is controlled by the muscles of respiration, phonation and articulation, and normal speech requires the co-ordination of all three. The infinite number of possible abnormal combinations is the reason why the functional troubles of speech are so numerous and varied, any one muscle or group of muscles being capable of contracting too strongly and too quickly, producing a convulsive phenomenon, or too slowly, causing inhibition.

Dyspnea, dysphonia, and dysarthria are discussed at some length, together with the effects of emotion, and other factors concerned in producing stammering. A. NINIAN BRUCE.

**THE CEREBRO-SPINAL FLUID IN HEALTH AND DISEASE.**

(261) CHARLES H. FRAZIER, *Journ. Amer. Med. Assoc.*, 1915, lxiv., April 3, p. 119.

THE writer concludes from experimental evidence that most of the cerebro-spinal fluid is actively secreted by the choroid plexus, but that some of it is derived from some other source. Experiments were also carried out with a view to discovering some means by which the flow of cerebro-spinal fluid could be increased or diminished. Many substances were found to increase the flow, and this was always accompanied by a fall in blood pressure. The greater the fall of blood pressure, the greater the flow. This was attributed to the dilatation of the cerebral blood sinuses pressing out the cerebro-spinal fluid, and not to any specific secretory action on the choroid plexus. An extract of brain tissue, on the other hand, produced a definite increase in flow without concomitant fall of blood pressure. This has been attributed by Dixon and Halliburton to the presence of a hormone acting on the choroid cells. As regards substances which inhibit the action of the choroid, after much search it was found that thyroid extract produced the desired effect. After injection, there was at first the usual transitory fall of blood pressure, and increase of cerebro-spinal flow, but this was followed by a *prolonged* diminution of the cerebro-spinal flow to about one-third that of normal. They also found that a synthetic substance, diiodotyrosin, gave a similar result. Absorption of the cerebro-spinal fluid takes place mainly by the venous channels. The system of absorption is very elastic, as is shown by an experiment upon a dog, where salt solution was allowed to flow by gravity into the subarachnoid space. It was found that 500 to 1,000 c.c. could be absorbed within an hour. The writer describes a clinical test, which he affirms will distinguish between hydrocephalus of the obstructive and non-obstructive types. He found that two hours after injection of phenolsulphonephthalein into the ventricles, 60 per cent. of the drug could be recovered from the urine. Again, in a case where the ventricles were artificially blocked, and phenolsulphonephthalein injected, only a trace could be recovered from the urine. This has been applied clinically, and in cases where the drug can only be recovered in minute quantities, some obstructive lesion is indicated, and the treatment becomes a question of drainage. J. K. MILNE DICKIE.

**NOISE-DEAFNESS. A Review of Recent Experimental Work, and a**  
 (262) **Clinical Investigation into the Effect of Loud Noise upon the**  
**Labyrinth in Boiler-Makers.** T. RITCHIE RODGER, *Journ. of*  
*Laryngol., Rhinol., and Otol.*, 1915, March.

THE writer has investigated the condition of the ears in forty-eight men who had been exposed during their work to loud noises. Most of these were boiler-makers and riveters. Some very interesting and hitherto unrecognised points are brought out with regard to boiler-makers' deafness, the principal characteristic of which was usually supposed to be loss of the upper tones. A number of men were examined who had been less than ten years at their trade, the majority of whom had not noticed any impairment of their hearing. It was found that in these early cases the perception of low and middle tones (C32 to C512) was distinctly diminished, while the upper tone limit was normal. In cases of longer duration (10-30 years), the change was more marked in the middle and upper tones, the upper tone limit being very much lowered. In a third group of men, who had been over thirty years employed, the hearing was markedly impaired over the whole scale. The noises to which these people are constantly exposed are not, as has been generally taken for granted, shrill noises, but sounds of low and medium pitch, and it is precisely those tones which are first lost. The following conclusions are arrived at:—

1. That loss of hearing for high notes is not, as hitherto taught, the outstanding feature of noise-deafness.
2. That the predominant noises to which the patient has been exposed determine the site of the initial lesion in the inner ear, and that for a considerable time the depreciation of hearing is mainly for sounds of a pitch corresponding to these noises.
3. That later, the unusual vulnerability of the lowest part of the cochlear canal gives rise to marked loss of hearing for high tones.
4. That the vestibular apparatus in such occupations as boiler-making, where loud hammering is being carried on, is also affected, although in less degree than the cochlear apparatus.
5. That the condition of noise-deafness could be to a very large extent obviated by the use of suitable ear-plugs.

J. K. MILNE DICKIE.

**THE PHYSICO-CHEMICAL COMPOSITION OF THE CEREBRO-**  
 (263) **SPINAL FLUID IN EPILEPSY.** (La composition physico-  
 chimique du liquide céphalo-rachidien des épileptiques.) THABUIS  
 and BARBÉ, *Rev. Neurol.*, 1913, xxi., p. 248.

THE authors here record the physico-chemical composition of the cerebro-spinal fluid in ten typical cases of epilepsy in great detail,

and come to the following conclusions :—(1) The density is slightly increased ; (2) the freezing-point is not affected ; (3) extractives are slightly diminished in quantity ; (4) ash is increased in amount ; (5) chlorides are increased ; (6) phosphates are mostly unaffected ; and (7) glucose is diminished—it was absent altogether in one case.

A. NINIAN BRUCE.

**A CASE OF PARTIAL CONTINUOUS EPILEPSY (SYNDROME (264) OF KOJEWNIKOW).** (*Un cas d'épilepsie partielle continue (Syndrome de Kojewnikow).*) Mme. LONG-LANDRY and M. QUEBECY, *Rev. Neurol.*, 1913, xxi., p. 145.

A MAN, aged 34 years, suffered from paraplegia of the lower limbs and Jacksonian epilepsy of the right upper limb. The former was due to Potts' disease, and a tubercular abscess was present at the level of the third lumbar vertebra. The latter began in the right arm and once spread to the left leg, producing a hemiplegia of five hours' duration, followed by a flaccid paralysis of the right arm with loss of the tendon reflexes. This was followed by a series of permanent clonic movements of the fingers, which were recorded on tracings, and occurred at the rate of three to six a second. These established the condition of partial continuous epilepsy described by Kojewnikow and by Bruns in 1894.

The authors consider the condition in this case to be the result of a cortical or sub-cortical tuberculous tumour involving the arm area at the middle third of the ascending frontal convolution.

A. NINIAN BRUCE.

**A CASE OF HYSTERO - CATALEPSY.** LIONEL A. WEATHERLY, (265) *Lancet*, 1915, clxxxviii., April 24, p. 853.

A WOMAN, aged 35, unmarried, with a neurotic family history, had a nervous breakdown at the age of 17. She had now a typical hysterical appearance with considerable mental excitement, restlessness, and confusion of ideas. She was isolated from her relations, and shortly afterwards developed several trance-like attacks in which all reflexes, including the conjunctival reflex, were absent for several hours. Prior to these attacks there would be great rigidity of the limbs, and the jaw was tightly closed or widely opened. After about an hour the rigidity would lessen, but the trance-like condition remained for several hours. Definite refusal of food now set in ; she became very emaciated, almost unconscious, the pulse could hardly be felt and recovery was considered improbable. However, she gradually improved, took nourishment and made a complete recovery.

A. NINIAN BRUCE.

**CHRONIC TETANUS, WITH RELAPSE CAUSED BY THE PERSISTENCE OF A PROJECTILE IN THE WOUND.** (Tétanos chronique à rechute causé par la persistance d'un projectile dans la blessure.) R. AUBOYER, *Paris Méd.*, 1914-15, ii., p. 462.

A SOLDIER, aged 23, developed tetanus thirteen days after receiving a shell wound in the left arm. The attack lasted six weeks, but was on the whole fairly mild and relatively localised, in spite of an opisthotonus of a few days' duration, as the right arm and lower limbs were not affected.

A relapse took place a month after the symptoms had subsided, and was more violent and generalised than the first attack. Complete recovery followed removal of the projectile.

J. D. ROLLESTON.

### PSYCHIATRY.

**OPHTHALMIC ZOSTER AND GENERAL PARALYSIS.** (Zona ophtalmique et paralysie générale.) HAMEL, SIMON, and LATAPIE, *Bull. Soc. de méd. de Rouen*, 1913, lii., p. 153.

BRISSAUD in his clinical lectures drew attention to the prognostic value of ophthalmic zoster which he regarded as a possible precursor of other cerebral symptoms.

In the present case, right ophthalmic zoster occurred eleven months before the first symptoms of general paralysis.

J. D. ROLLESTON.

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## Reviews

**ANATOMIA CLINICA DEI CENTRI NERVOSI.** Ad uso dei medici e degli studenti. Dott. G. MINGAZZINI, Prof. nella Regia Università di Roma. Second edition. Pp. xii+936, with 470 figs. (many coloured). 1913. Unione Tipografico-Editrice Torinese, Turin, Italy.

THE first edition of this book appeared in 1908 and represented the first important Italian contribution to the anatomy of the nervous system. This, the second edition, has been revised and enlarged. It is a work which approaches the subject of neurology from a different standpoint from any other text-book of this size. It is based on the fact that it is just as essential for the anatomist to think clinically as for the clinician to think anatomically, and affords an excellent example of how much

additional interest may be imparted to the somewhat wearisome study of the anatomy of the nervous system, when it is combined with a description of the various pathological changes which these structures may undergo, together with the clinical symptoms produced by such changes. This is, as the title shows, the aim of this volume, and the result fully justifies the claim that it is a "Clinical Anatomy" of the nervous system.

The book gives a full description of our present knowledge of the nervous system, and is particularly rich in illustrations. The style is simple, concise, and clear. The first chapter is concerned with the histology of the nerve cell and of the nerve fibre. The methods of investigation and development are then briefly described, followed by a chapter on the macro-microscopic anatomy of the spinal cord. The descriptions of the ascending and descending pathways are particularly good and the illustrations both numerous and clear. The cerebellum and all the other parts of the brain are then worked through systematically, while special chapters are devoted to important subjects such as sensory aphasia, motor aphasia, alexia, agraphia and amusia, &c. The chapter on the corpus callosum is both anatomical and physio-pathological; that on the pituitary not only describes the structure of the gland, but also discusses its relation to acromegaly, which is illustrated by cases. Another chapter takes up the question of the vascular changes found in the cerebral vessels, while optic neuritis and optic atrophy are considered in the chapter on the visual pathway.

In a work of such importance as this it is difficult to select any special chapter for praise, but the illustrations of the cranial nerves and the vascular supply to the brain are particularly good. Each chapter is followed by a large bibliography and there are complete author's and subject indices.

We should like to take this opportunity to put forward a plea for the more extensive recognition of Italian neurological works in this country. Medical Italian is not difficult to understand, and certainly no neurological library could possibly be complete that did not contain this work, which is a mine of valuable information.

**AN ATLAS OF THE DIFFERENTIAL DIAGNOSIS OF THE DISEASES OF THE NERVOUS SYSTEM.** *Analytical and Semiological Neurological Charts.* HENRY HUN. Second revised and enlarged edition. Pp. 287. 1914. The Southworth Co., Troy, New York.

THIS work is undoubtedly unique, being one of the most original and ingenious books upon the nervous system which have

appeared within recent years. The author points out in his preface that the analytical method is used in the diagnosis of nervous disease to an extent not equalled in any other system. "The neurologist subjects a patient to one test after another in definite sequence. As the result of each test he throws out of consideration one or more groups of diseases, and assures himself that he has to do with a disease belonging to another definite group. With each successive test the number of diseases constituting a group becomes less, until finally one definite individual disease stands revealed among the few most closely related to it by a comparison of the remaining symptoms characteristic of each, which are given in the final abstracts. It is the crystallisation of this teaching into the tabular form which this book attempts to present."

With this aim the author has arranged a large number of charts in which one particular symptom is taken, such as ataxia, tremor, nystagmus, local spasms, coma, pain in extremities, vertigo, disorders of sensation, flaccid paralysis, spastic paralysis, &c. The symptoms and tests relating to each are first epitomised, a diagnostic analysis of the symptoms is then given, and finally the diagnosis itself is arrived at. These charts are preceded by a description of the methods of examination of patients suffering from nervous disease. The numerous technical terms employed are all defined and explained, the definitions being particularly clear and concise, while charts are given describing the various alterations in the cerebro-spinal fluid, the symptoms in transverse lesions at different segments of the cord, electrical examination, &c. The volume concludes with a number of plates illustrating the origins of the cranial nerves, the motor and sensory projection tracts, the motor and reflex functions of the spinal cord segments, &c.

It is impossible to close this book without being struck by the amount of time and labour which the preparation of all these charts must have entailed. Practically everything which is required to be known for the diagnosis of nervous diseases has been incorporated. The index is most complete, and any information required can be quickly and easily discovered, while the system of crossed references is so good that the relation of any symptom to any disease may be immediately traced.



**A TEXT-BOOK OF INSANITY AND OTHER MENTAL DISEASES.**

(270) By CHARLES ARTHUR MERCIER, M.D., F.R.C.P., F.R.C.S., late Lecturer on Insanity at the Medical Schools of the Westminster Hospital, Charing Cross Hospital, and the Royal Free Hospital. Second edition, entirely rewritten. London: George Allen and Unwin, 1914. Pp. 348. Pr. 7s. 6d. net.

DR MERCIER states in the preface to the second edition of his text-book (the first was published in 1902) that his primary object was the writing of a text-book for students, though he also declares that it is further intended for those who devote themselves temporarily or permanently to the special study of insanity. After a careful perusal of the volume, those who are qualified to judge will, we think, agree that its appeal is mainly to the latter class, and that the student is less likely to benefit by it. Those who know its distinguished author, also know that he has little sympathy with certain modern trends of thought in mental disease, and that he has ever preferred to "plough his furrow" if not exactly alone, at least in a small and select company. Unfortunately, as Dr Mercier is aware, students find there are such necessary evils as examinations for university degrees to be faced, yet he has the candour to admit that "the book will be to some extent vitiated by the exclusion of the fashionable titles of dementia præcox and manic-depressive insanity." It is not merely, however, that these and other commonly used "titles" are omitted, but that the terminology, classifications, and arrangements of subject-matter are little calculated to help the student, that constitute a material defect in the book. Thus chapter v. deals with the "forms" of insanity, chapter vi. with the "types" of insanity, and chapters vii. and viii. with the "kinds" of insanity. To appreciate all these distinctions is arduous enough for anyone unfamiliar with the subject, while to be told that "dementia is a form of insanity common to every kind" (p. 163), that "anoia constitutes insanity" (p. 169), that "dementia, the type of insanity, is always of the form anoia, while dementia, the disease, is always of the type dementia" (p. 292), is merely confusing.

As far as we have noted, the sole mental disease for which any pathology is described is general paralysis (it may be remarked in passing that the plural of "triponema" (*sic*) is given as "triponemæ"). There is no index to the book, but in its place is a page bristling with the peculiar form of humour that Dr Mercier affects: even the humour, however, will not blind the reader to the absurdity of the position adopted by the author, that in no book is the index ever consulted, except in Bradshaw, the Stores Catalogue, Whitaker's Almanack, and productions of that type. The psychiatrist will probably enjoy the preface to

this second edition as much as the "index." The book is worth reading for these few pages alone.

**THE STORY OF BETHLEHEM HOSPITAL FROM ITS FOUNDATION IN 1247.** EDWARD GEOFFREY O'DONOGHUE, Chaplain to the Hospital. Pp. xx+427, with 140 illustrations. T. Fisher Unwin, London. 1914. Pr. 15s. net.

In this book there will be found a complete history of Bethlehem Hospital, the oldest asylum known. The priory of St Mary of Bethlehem in Bishopsgate Without, London, was founded on the 23rd of October 1247, on the present site of Liverpool Street Station. It was a daughter-house of the monastery of St Mary, Bethlehem, Palestine, which was founded by the Emperor Constantine in 330 A.D. in order to give shelter and alms to poor pilgrims going to the Holy Land. In 1244 a Mohammedan invasion despoiled and ruined the church. An appeal was made to Pope Innocent IV., who gave the brethren a circular-letter which was publicly read in churches in Italy, England, and Scotland. Among those who heard it in London was Simon Fitz-Mary, sheriff of the city of London, a man of wealth and influence, who became so interested that he gave to the Bishop of Bethlehem land in Bishopsgate for the establishment of a priory, which appears to have soon become an asylum for insane persons, although this was not the original intention of the donor. In 1346 the House and Order of Bethlehem were taken under the protection and patronage of the city, but were several times seized by the Crown as an "alien hospital." Among the masters appointed by the Crown were John Arundell, a royal physician, and George Boleyn, brother of Queen Anne Boleyn. In 1546 Henry VIII. granted St Bartholomew's Hospital and "the hospital or house called Bethlem" to the city of London. The great fire of London, in 1666, fortunately spared the hospital, but in 1674 it had to be abandoned, and a new site was found for it at Moorfields. This building was finished in 1676, and was the "Bedlam" of Hogarth, and it is recorded that in 1693 a nurse was tried "as an experiment." By 1800, however, a new site became necessary, as the old site, having been built over the city moat, had become insecure. The present building in St George's Fields, Southwark, was begun in 1812 and finished in 1815. In 1814 a land agent of Pall Mall, Edward Wakefield, chanced to visit Bethlehem, and saw a patient, called James Norris, in chains. He persuaded some other members of Parliament to come and see him also, and the feeling so aroused, together with the interest in the insanity of George III., resulted in new legislation and the

appointment of lunacy commissioners, under whose supervision the hospital has been since 1853. The above is a very brief description of the history of Bethlehem Hospital, and we feel sure that all who read this story will agree that the author has produced here a fascinating book. He has a most charming style, especially when "in a gossiping mood," and has illustrated his book so profusely that it is possible to realise what has been happening during the whole of the 668 years which the hospital has been in existence.

The whole of the archives of the hospital from the reign of Henry VIII. to the year 1852 had been placed at the author's disposal, and the care with which every conceivable source of information has been searched, makes the author's enthusiasm most infectious.

**KNOW YOUR OWN MIND.** A little book of practical psychology. (272) WILLIAM GLOVER. Cambridge University Press, 1915. Pr. 2s. net.

THIS little book is an excellent introduction to the study of psychology. The subject is discussed in a series of seventeen chapters, which can be easily understood by anyone without any previous knowledge of the subject. The author has the somewhat unusual gift of being able to explain what he means both simply and accurately, and the result has been the production of a book from which "the elements of the mental machine may be clearly apprehended, and their workings easily grasped." The author also makes clear how important it is for those who have the education of the young in their care, to understand the elementary principles of psychology and the workings of the mind, and he has specially devoted his attention here to those parts of psychology which are most directly applicable to everyday life. He approaches the subject with a distinct Herbartian bias, and explains the building up of apperception masses, and the conditions of apperception clearly. Other chapters are on training, observation, judging and reasoning, attention, interest, how ideas get into the mind, and so on. This book ought to prove of great value to all whose work brings them in contact with normal or abnormal psychology in any form, and who wish to have the rudiments explained to them in simple non-technical language.

## Obituary

### THE LATE SIR THOMAS CLOUSTON, M.D., LL.D.

SIR THOMAS CLOUSTON'S death marks a distinct blank in the ranks of those who devote themselves to the study of nervous and mental diseases. Although he had, some years ago, retired from the active work of his speciality, his interest and sympathy with it remained undiminished. He continued to contribute to its literature, and, up to the last day of his life, to take an active part in promoting such useful schemes as the Scottish Asylums' Laboratory. He was from the first an ardent supporter and well-wisher of this Journal, and did what in him lay to make it a success.

Thomas Smith Clouston was born at Harray, in Orkney, on the 22nd April 1840. He continued throughout a long and busy life to identify himself with his native county and its interests, returning there for his annual holidays, and cultivating that local atmosphere which is so conducive in consolidating character and strengthening purpose. He received his early scholastic education in Aberdeen, after which he proceeded to the University of Edinburgh to study medicine. The Edinburgh Medical School was then famous all over the world on account of the number of distinguished men who occupied its teaching Chairs. It is probable that Clouston's mind, for some reason, had an early bias towards the study of mental diseases. At any rate, Laycock's influence over him was undoubted, and Laycock, then Professor of Medicine, delighted to lecture on mental diseases. Judging from his published works, Laycock's views on psychiatry were chiefly speculative, but they were also highly suggestive, and no one with an interest in the subject could have listened to them without being moved and interested. When he had completed his medical course he immediately became Assistant Medical Officer at the Royal Edinburgh Asylum under Dr Skae. Here he came under the influence of an original and impressive personality. It is difficult to estimate Skae's standing in the speciality, for he left behind him more of an influence than of a special school of thought, but contemporary opinion places him very high indeed. After a brief residence at Morningside, Clouston became Medical Superintendent of the Cumberland and Westmoreland Asylum, Carlisle. Here he remained for ten years, when, in 1873, he was

appointed to succeed Dr Skae as Physician Superintendent of the Royal Edinburgh Asylum. Of his ten years at Carlisle it may be said that he worked hard, wrote much, and laid the foundations of his reputation. His work here was chiefly clinical, and although to the younger specialists of to-day some of it may appear crude, it must never be forgotten that it formed a necessary preliminary to the more highly technical development of modern psychiatry. His first duty on returning to Edinburgh was to complete the delivery of the Morison Lectures on the "Somatic Classification of Insanity," which the death of Skae had interrupted. This he faithfully did, championing loyally the views of his late chief. It is not easy to estimate the merits of Skae's classification, for in the steady march of psychiatry more important developments overshadow such significance as it may possess. Until far greater and more important questions are settled, the study of the influence of physical disease and diathesis upon the ætiology and course of mental diseases must remain in abeyance. When, ten years later (1883), Clouston published his well-known "Clinical Lectures," it was evident that the Somatic Classification had been relegated to a subsidiary place.

It was by the publication of his "Clinical Lectures" that he established his fame as a psychiatrist. The book had a phenomenal reception all over the world. Vigorous writing, clear exposition, and a judicious balancing of the contents earned for it a deservedly high place. Although it was a book eminently for students and practitioners, it contained matter which the expert could not ignore and was forced to appreciate. Such a combination is fast becoming a thing of the past, and most of the modern writings on psychiatry are probably as dry to the ordinary reader as works on neurology or engineering. It is to be hoped that when the intellectual pride, born of the rapid rise of a new science, has subsided, writers on psychiatry will return to the simplicity of the old masters.

In estimating Clouston's place as an alienist, we have to take him in the light of his age. Thirty years ago the study of mental diseases had not attained to a true scientific platform. It suffered from prejudice, scepticism and indifference, and a lack of academic recognition. In this country Clouston gave it the impetus which forced it into recognition. No doubt the times were ripe, but fortunately the man was there, otherwise things might have been

different. By his great powers as a lecturer he educated generation after generation of medical men into what may be termed an enthusiasm for this branch of medical study. Finally, his contributions to our knowledge, which were numerous, culminated in his presentation of Adolescent Insanity—a presentation which continues to form the basis of all subsequent works on the subject. These facts entitle us to place him alongside the leading alienists of Europe during this and the latter half of the preceding century.

As a man Clouston was broad-minded and possessed of great ability and shrewdness. His character was strong, courageous, and morally above the average. To his friends he was always loyal, and he was ever ready to extend a helping hand to any one whom he had the power to assist. He met the younger members of the profession with that kindly sympathy, devoid of any shadow of superiority or patronage, which only men cast in greater moulds can exhibit. Many of them remember gratefully the acquisition of self-respect and the benefit which they derived from their intercourse with him. His influence upon asylum administration was particularly beneficial. In many respects he was a model Superintendent, scrupulously conscientious in the discharge of his duties, subordinating every consideration to the medical element in administration, and emphasising essentials while not neglecting details.

The honour of the medical profession was dear to him, for although he was a specialist he rose above its narrowing influences, and was universally recognised as a physician in the widest sense of the term. Perhaps that is one of the greatest tributes to his memory.

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**Review**  
**of**  
**Neurology and Psychiatry**  

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**Original Articles**  

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**THE NEW PSYCHIATRY.**

By W. H. B. STODDART, M.D., F.R.C.P.,

Lecturer on Mental Diseases at St Thomas's Hospital, London.

(The Morison Lectures delivered at the Royal College of Physicians,  
Edinburgh, in March 1915.)

**LECTURE III.**

BEFORE proceeding to the main subject of this lecture, "The Applications and Results of Modern Psychological Discoveries in and Therapeutics of the various Neuroses, Psychoneuroses, and Psychoses," I wish to mention another important psychological mechanism which often serves as an indicator of repressed complexes, not only in nervous disorder, but also in everyday life. I refer to "projection."

The peculiarity of this phenomenon is that the effects of the repressed complex are attributed by the individual possessing it, not to himself, but to some other person. A few examples will explain my meaning. People who are guilty of some failing, imperfection or weakness, of which they are ashamed, are exceedingly liable to attribute the same fault to others. If a thief

loses an article, his first thought is that somebody has stolen it from him, and the man who is ever ready to disbelieve any statement made to him is himself a person who is habitually economical of the truth. The dishonest financier is always on the alert lest somebody should swindle him and he is exceedingly intolerant of anybody who succeeds in doing so. The man who is unfaithful to his wife is usually suspicious that she may have been unfaithful to him, and how often have we all heard an asylum patient declare that his wife is insane, or a drunkard accuse his consort of insobriety. Self-reproach is so unpleasant to consciousness that it is repressed and converted into reproach of other people.

The mechanism of projection is common in many forms of insanity. I remember a patient who travelled all over England in search of an imaginary lady, whom he supposed to be in love with him, the real truth being that he himself had an unconscious desire to get married; and some unmarried ladies at the climacteric have their libido unconsciously fixated on some unfortunate individual, with the result that they think that he has fallen in love with them or is paying them undesired attention.

Hallucinations sometimes arise in this way. The patient, instead of accusing himself of some fault, refuses to acknowledge to himself that he possesses it, and believes that other people are accusing him, the hallucinations being in reality symbolised self-reproaches.

I now propose to discuss various matters that have been elucidated by psycho-analytic methods respecting the neuroses, psychoneuroses and psychoses.

Freud recognises two neuroses proper, viz.: Neurasthenia and the Anxiety Neurosis. Probably a few cases of hypochondriasis are due to the same etiological factors as these neuroses and should therefore be included in the same group.

Neurasthenia is a term which hitherto has been used very loosely and the separation of the Anxiety Neurosis as a distinct disease is due to the clinical insight of Freud. The term "Neurasthenia" is now limited to a class of case which exhibits very definite symptoms, the chief of which is an undue tendency to fatigue. This is well demonstrated in ergographic tracings



from neurasthenic patients. In a normal person such tracing shows a gradual increase of power at the beginning of the experiment, so that the lever rises more and more with each successive contraction. This is ascribed to the effect of practice. Subsequent contractions remain at the same level before fatigue sets in, when the level rises less and less until, the finger becoming absolutely useless, the tracing becomes a straight line. With a neurasthenic, on the other hand, the initial increase of power due to the effect of practice is not shown. The first few contractions may be of an average height, but fatigue sets in immediately and the contractions become weaker and weaker.

The same phenomenon is shown in experiments devised for the purpose of investigating the laws of mental fatigue. In Weygandt's method, for instance, the patient is given a sheet of paper with columns of figures to be added. He starts at the first column, and at the end of a minute writes down his result so far as he has gone. Then he passes to the next column, adds for a minute and puts down the result as before, and so on through the whole series. In a normal person, at first the effect of practice is noticeable in that the added portions of the column get longer and longer until, fatigue setting in, they grow shorter and shorter. In the neurasthenic, on the other hand, the added portions shorten from the very first. Mistakes in the addition also occur earlier than in a normal individual.

The so-called "irritable eye" exemplifies the muscular fatigue, the patient complaining that the eyes ache on reading for a short time, although no error of refraction can be found. Examination with the perimeter soon fatigues the retina, and, unless carried out quickly, the visual field will be found contracted or spiral.

These patients are anxious enough to be busy about their affairs like other people; but all effort, mental or physical, leads to an intense feeling of fatigue. In many cases, even the thought of doing anything causes the patient to tremble and to break into a profuse perspiration. Other symptoms are a sense of pressure on the top of the head, often localised to one spot on the left of the middle line, and various paræsthesias, especially of the joints and muscles and the back of the head over the occipital spine. The last is explained as a "crawling" or "screwy" sensation, and was aptly described by one patient, whose case was related to me, as a feeling as if there were a

black-beetle inside the skull lying on its back and kicking to get on its legs again. Feelings of abdominal discomfort also occur and there may be hypochondriacal notions respecting the genito-urinary apparatus.

Similar symptoms frequently occur in states of general debility, such as chlorosis, and in the early stages of organic nervous disease, such as disseminated sclerosis or general paralysis. In these conditions the case should, of course, not be labelled "Neurasthenia"; but when the above symptom-complex occurs independently of any other disease, then we have to deal with a case of true neurasthenia.

Now, in all cases of this kind, without exception, there is always to be found one essential etiological factor, viz.: sexual excess. In the majority of cases this takes the form of masturbation, but in a few patients the disease is traceable to frequent nocturnal pollutions, and I have come across a still smaller number of neurasthenics who, being habitual *roués*, owe their neurosis to excessive indulgence in normal sexual intercourse. These cases differ in recovering easily and rapidly as soon as the cause of their malady is explained and removed. Freud and many of his followers, however, believe that neurasthenia has essentially an *auto-erotic* etiology.

The pathogenic influence of masturbation is easily comprehensible when we consider the severity of the mental conflict which must occur in association with every act, and it has been suggested that the excessive outflow of energy is to be explained by the fact that it is equivalent to that of *both* partners to a normal sexual act.

Suitable advice and recommendations as to mental hygiene are the proper remedy; but it is often necessary to carry out a certain amount of psycho-analysis in order to trace and uproot the complexes which constitute the foundation of such irregular sexual impulses.

The "Anxiety Neurosis" is characterised, as its name implies, by a persistent state of anxiety or fear, usually without obvious cause, but sometimes initiated by some real cause for anxiety. This state is always out of proportion to its cause, and the other symptoms of the neurosis are exaggerations of the normal physical signs of fear. Such are irregularity and an increased frequency of the pulse, palpitation, anginal attacks, general vasomotor con-

striction with coldness and blueness of the extremities, dryness of the mouth, perspiration (especially of the hands), polyuria, diarrhoea, respiratory oppression and air hunger, even attacks of asthma, vertigo, tremor, attacks of ravenous appetite, nausea and sometimes actual vomiting, night terrors and insomnia, hyperæsthesia for visual impressions and especially for noises, and a general apprehensiveness.

Such patients are liable to exacerbations of their various symptoms, in which the feeling of terror may be extremely severe, with a feeling of congestion in the head and a dread of impending death. It is even said that there may be temporary loss of consciousness, but I have not seen such a case.

It may seem extraordinary that a disease with such a wealth of symptoms should not have been recognised before, but it is simply due to the fact that these cases have hitherto been labelled "Neurasthenia," a term which possessed the vaguest significance, and the physician remained puzzled.

It is to Freud that we owe the recognition of this disease, and it was Freud who discovered the essential etiological factor. He and all who have subsequently investigated the matter are agreed that the anxiety neurosis owes its origin to an accumulation of mental excitement which finds no somatic outlet, and further that this excitement is almost always, probably always, of a sexual nature. Accordingly we meet with this neurosis among engaged couples who cannot afford to get married, in widows and widowers, in women whose husbands practise coitus interruptus (this is the commonest cause), in women during the climacteric whose husbands have reached senility, in patients who with great effort have renounced masturbation, and such persons. Some authorities regard the mental factor as more important than the somatic and explain the anxiety neurosis as the result of sexual excitation under circumstances in which the mental constituent (desire) is not allowed to reach consciousness. Ernest Jones, for example, says, "The desire is diverted from consciousness and becomes converted into its opposite—namely, dread ; morbid dread is sexual desire that the subject does not wish to feel."

While sexual abstinence in its many forms is the chief cause of the anxiety neurosis, it is not pretended that there are not important contributory factors. Heredity is one, and the condition also arises from overwork and exhaustion, especially after

severe illness and prolonged watching by the bedside of a sick relative by night as well as by day.

Unfortunately, the obvious remedy for such a neurosis is often impracticable and it is my custom, in these cases, to seek by means of a short analysis interests of the patient into which his repressed energy may be directed (sublimation of the sexual impulse) and, in the meantime, to prescribe some anaphrodisiac medicine, my favourite mixture for such purposes being a combination of camphor with the extract of black willow.

The psychoneuroses and psychoses are on an entirely different plane from the neuroses. The neuroses, as we have seen, owe their origin to existing causes, probably of a chemical nature, at the time of the malady, but the psychoneuroses and psychoses are compromise formations between repressed wishes and the forces which repress them; that is to say, that their mechanism is exactly the same as that of dreams. The obvious differences between dreams and the psychoneuroses are that, in the one, the subject is asleep and desires to go on sleeping, while, in the other, he is awake; and also that dreams are normal while psychoneuroses are abnormal. Yet even these differences are not absolute; for, on the one hand, certain neurotic symptoms, such as somnambulism, night terrors and nocturnal paralyses, are definitely associated with sleep, and, on the other hand, we have to bear in mind the day-dreams of certain hysterical patients. Again, certain anxiety dreams occur in neurotic patients only.

The similarity is therefore closer than appears at first sight, and in both we have exactly the same mechanisms of distortion—the frequent importance of minor symptoms, condensation, transference of the affect, symbolism, somatic displacement, ellipses, inversion and dramatisation.

One might see a difference in the fact that, in the psychoneuroses and psychoses, the patient actually lives his dream; yet even here we must be cautious, for I have known two or three patients whose first symptom was a dream which was believed on waking and has since remained in the respective patients' minds as a memory of an incident which actually occurred.

Perhaps I may be allowed for purposes of elucidation to take a purely imaginary case of a pretty young girl who, in a household of three persons, acts as the servant and drudge of her two older stepsisters and is not allowed to appear as a member of the family

lest some eligible young man's attentions should be diverted from one of the older sisters to the youngest. Her natural wish is that she should escape such slavery and happily marry some handsome young man of wealth and position; but such a wish has to be brushed aside as impracticable and it is repressed into the unconscious. If she reads the fairy tale of Cinderella, being a normal person, she thinks how delightful such happenings would be if they occurred to her, but she puts the thought aside with the book and resumes her drudgery.

At night her wish escapes repression in a dream in which she herself is Cinderella and, as the midnight hour strikes, she awakes to find that it was all a dream.

If, however, she is a psychotic person, she may first develop ideas of persecution by her elder sisters and, after passing through a morose period, develop hallucinations of vision and hearing and, living in a world of her own, believe that she is really Cinderella and marries the prince. Ultimately she becomes an asylum queen. Her wish is fulfilled and she is a case of dementia præcox.

If, instead of this, our patient develops a condition of motor excitement with boastfulness and loquacity, playing all the while with the idea that she is destined to become a princess, but always holding to her relationship with the outside world, she would be a case of acute mania, with every probability of recovery, but subsequently always running the risk of a repetition of such an attack should her environment, or even perhaps a chance remark by association, bring her repressed wish within the realm of consciousness.

Now let us conceive the relationship between our paradigms to be that of half-sister instead of stepsister, and, being children of the same parent and brought up together, let us suppose that at one time our Cinderella had a certain amount of affection for her half-sisters, and that at some period of her life there may have been a conflict between love and hatred of them. Her love has been repressed, and now her whole affective tone is one of hatred. She has even played with the notion that some fatal accident might occur to them, and that she might thus be released from her unfortunate position. She will not admit to herself that such an idea has ever crossed her mind, and it becomes in turn repressed. In course of time the repression fails and the unconscious

wish reappears in consciousness in a distorted form—let us suppose in an inverted form, so that she suffers from a constant fear that some fatal accident may happen to her. She is the victim of a hysterical phobia, and would be classed as a psychasthenic.

On the other hand, her former love for her sisters may have had such a permanent influence on her mind that her affection is for ever afterwards unconsciously directed towards people of the same sex as they are, the same sex as herself. In other words she is a repressed homosexual. Her unconscious reasoning then runs thus: "I do not like men"; this by projection becomes "Men do not like me," "Men hate me," "I am persecuted by men." She is then a paranoiac.

Lastly, if her mental conflict is not between her repressed wish and an inhibition, she becomes a case of hysteria. Her unconscious wish is to go forth and seek her predestined lover; the inhibition is that she must busy herself about the house and do menial work. A compromise is sought between the two and she develops, for example, a hysterical paraplegia which excuses her both from her work *and* from carrying out her unconscious desire.

I now consider these various disorders in slight detail. The essential characteristic of any hysterical manifestation, as I have just suggested, is that it is a compromise formation between a repressed wish and an inhibition. I desire to lay stress on this as an important point.

There are two varieties of hysteria—*anxiety hysteria* and *conversion hysteria*. The former comprises hysterical phobias, hysterical day-dreams, and what one may call hysterical attacks; the last includes cases in which the repressed complexes are converted into somatic symptoms.

Phobias or morbid fears may occur in many forms of mental disorder. Hitherto there has been a tendency to refer them all to the obsessional or compulsion psychoneurosis, but psycho-analysis has revealed that they frequently take their origin in a conflict between a repression and an inhibition. As this is one of the characteristic features of a hysterical symptom, we must therefore recognise the existence of a hysterical phobia.

Hysterical day-dreams or hypnoid states are interesting in that they closely resemble ordinary dreams. Brill gives several excellent examples, which I will quote, and he agrees with Freud

in stating that they invariably occur in patients who have renounced masturbation and refuse to relieve an over-stimulated sexual impulse.

Three stages of these dreams are to be noted, the first being one of euphoria with fantastic exaltation, the content of which deals with the individual's aspirations, the second a dream-like withdrawal from reality in which the patient is no longer controlled by logical reason and judgment, and the third is an absent-minded depressive stage. These three stages correspond with and replace those of masturbation : (1) fantastic euphoria, (2) self-absorption and gratification, and (3) depression.

A young woman used to imagine herself married to a handsome, wealthy man. She had three most beautiful children. They all lived in blissful happiness in a magnificent yacht and entertained most charming people. Then the whole structure crumbled; her husband and children died and she was left alone in a terrible depression lasting for days.

A young weaver, who thought he was persecuted by his employer, used to think what he would do if he had £400 a year. He imagined himself starting a shop and earning much money by oppressing his employees. The business grew until he had hundreds of people working for him. He became greater and greater until he found he had lost all his money on the Stock Exchange.

A young journalist imagined himself running a race and winning, when he was struck in the thigh by the spiked shoe of one of the competitors. He is bleeding and his trainers try to stop him, but he strikes them aside and runs on, winning the race. Then he collapses exhausted and is carried off amidst the cheers of the crowd.

A case from Freud. A lady fancied herself in delicate relationship with a piano virtuoso whom she did not know personally. In her fancy she bore him a child. He then deserted her, leaving her and her child in misery. She then suddenly found herself in tears in the street along which she happened to be walking.

Those who are familiar with psycho-analysis will discern the sexual complexes underlying these day-dreams:—the desire for marriage in the first and last, the sadistic complex in the second, and the exhibition tendency in the third.

I have said that these hysterical day-dreams are said to occur in patients who have renounced masturbation, but we must go deeper than this to explain the content of the dream, and this leads me to the essence of Freud's theory of hysteria.

I ought to say that I have come across cases of hysterical day-dreaming in which masturbation certainly played no part. Only recently I had a lady under my observation, who imagined that she knew a soldier, named Paul Graham, in the Royal Field Artillery in the trenches. He would come home on leave and she would meet him at Brighton. On analysis, Paul was identified with a character in a novel she had read, and Graham suggested Graham White. This was one of many day-dreams she had had in her life, but masturbation certainly played no part in this case. On the other hand, she had been subjected to many sexual assaults between the ages of six and fifteen.

Freud's theory of hysteria depends on the recognition of the infantile development of sexuality. Many incidents of sexual import occur during childhood which at the time have no sexual significance, but the recollection of them after maturity is disproportionately exciting because puberty has in the meantime incomparably increased the reacting capacity of the sexual apparatus. More than twenty years ago Breuer thought that these occurrences were of the nature of gross sexual assaults on the child, but ever since that time Freud has recognised that they are in reality nothing more than commonplace events whose importance is exaggerated by the patient after puberty. I mention this especially because some authors are still keeping up the idea of the infantile psychic trauma which all responsible authorities have abandoned for many years. Ordinary infantile ideas tend to fade with time, but sexual infantile memories are accentuated during normal biological development and are reinforced at puberty and during later life in a way in which no other experiences are strengthened; but inasmuch as they can then find no appropriate sexual outlet or reaction, they are repressed into the unconscious, and, if particularly strong, form an abiding focus of mental irritation.

These unconscious infantile memories influence the whole sexual life of the individual, and in the cases we have just considered are the determining cause of the masturbation. When the repression fails we find that fantasies have been weaved



round the original experience and they reappear as such hysterical day-dreams as I have just related.

These hypnoid states, as they have been called, are sub-conscious rather than unconscious manifestations of hysteria. Sometimes, however, the fantasies or memories assume an unconscious form and then we have the so-called hysterical attacks. These consist of a series of emotional displays which are rendered comprehensible when the physician has discovered the underlying thought, for he is then able to see that such emotional manifestations are such as might be expected to occur in response to the given stimulus. They are indeed, as a rule, grossly exaggerated; but they occur independently of any idea in the patient's true consciousness of the situation to which he is reacting. The affective state is entirely dissociated from the situation which gives rise to it and—in common with the dream—it represents the fulfilment of an unconscious wish. Attitudes are assumed which look as if the patient is trying to avert some danger or he (more commonly she) assumes lascivious postures which leaves no doubt in the mind of the onlooker that some sexual idea underlies the clinical picture. Those who have any doubt on this point might with advantage look at the beautiful illustrations in Richet's book on hysteria, which were produced long before the sexual etiology was seriously proclaimed.

Lastly, we have "conversion hysteria" which results from a persistent strife between some painful memory and the restraint of the censor from its coming to the surface, the result of the struggle being a compromise whereby the idea by distortion becomes converted into a somatic symptom, some bodily motor or sensory innervation or inhibition.

Probably all of you have heard of Freud's patient who consulted him for an intractable facial neuralgia. By psycho-analysis this was traced to an occasion when she was insulted by her husband. The insult was forgotten but subsequently appeared in symbolic form as "a slap in the face." The same patient suffered from globus hystericus which symbolised "I have to swallow that."

In some cases astasia-abasia is symbolic of dependence and helplessness, inability to make headway, having no support, and so forth.

Somatic displacement occurs. Jung mentions a case of a hysterical patient in whom a stiff arm symbolised an erect penis, and one of Brill's patients suffered from a hysterically painful breast which was directly traceable to an occasion when, during an embrace, she felt the pressure of an erect penis against her thigh.

The common symptom, hysterical vomiting, is frequently traceable to some sexual basis. In one case it signified disgust or self-reproach, because the patient has perceived a genital sensation on the occasion of a kiss.

It will have been gathered that psycho-analysis is to be regarded as the most radical form of treatment of hysteria and other functional mental disorders to be presently discussed, but I might here refer to other methods in common use. Weir-Mitchell's "rest-cure" is quite fashionable at the present time, and undoubtedly gives good results in many cases, provided it be used rationally and in combination with some psychical influence at the same time. Suggestion is most commonly used, and Weir-Mitchell's private opinion of the whole procedure was that it acted mainly as a suggestive agency. The prolonged mental and physical rest are beneficial, the removal from home surroundings has the advantage of withdrawing the patient from an environment which has usually proved somewhat irritating, the massage and possibly the electricity tend to improve metabolism, and the over-feeding is well suited to patients who are ill-nourished. Let me say at once, however, that this method is worse than useless in any other condition than hysteria and, even in this disease, failures are far from uncommon. Moreover, the expense is often as great as in psycho-analysis.

Hypnotism may often be employed with advantageous and often dramatically successful results in hysteria. Hypnosis is much more easily achieved in this disease than in other mental disorder and it may be used in one of three ways:—

- (1) To get the patient into an extremely suggestible mood so that suggestion of recovery may be given.
- (2) To recover buried memories.
- (3) To get the patient to react emotionally to such buried memories or, as Freud would put it, to obtain an abreaction to a repressed complex.

The compulsion neurosis is a disease which shows itself in a

large number of ways. The patients have a clear intellect and good memory and they are well orientated in time and place, but they suffer from mental symptoms into whose morbidity they have a clear insight. They suffer from irrepressible thoughts which often take the form of metaphysical questionings, such as "When was the beginning of all things?" "What existed before that?" "Who created God?" or they attach undue importance to superstitions or they cannot help repeating in their minds things they have heard.

Many suffer from morbid fears, fear of open spaces, of closed doors, of heights, of vermin, of broken glass, of pins, knives and so forth. Others are in fear of blushing under certain circumstances, with the inevitable result that they do blush, or they are afraid that their bowels will act at an inopportune moment, as in church, at a concert or in the train, again with the not unusual result that their fears become justified.

Then there are the morbid, irresistible impulses in which the patient feels impelled to perform certain acts against his will. As examples, arithmomania or the impulse to count things, to count one's steps, the rails of a fence, the rungs of a ladder, the windows of a house, &c.; the impulse to read every advertisement or placard one comes across or even another person's newspaper or letters, the impulse to steal (kleptomania), the impulse to set things on fire (pyromania), certain cases of homicidal and suicidal impulse.

Some authorities regard certain motor agitations, such as the tics, as obsessions. This may be right in the early stages of a tic, but it would be wrong to do so when the tic ceases to be consciously performed.

Some of these patients have feelings of *incompleteness* in action, in intellectual problems, in emotional reaction and in perception. Others have strange feelings of unreality and of depersonalisation, called by Janet psycholeptic crises.

The unity of this disease has been recognised for many years in spite of its multifarious symptoms. Fifty years ago it was called "volitional insanity," on the hypothesis that the essential basis was a weakness of will-power. Then it was called "obsessional insanity," a term which was justifiable in that it offered no explanation. The mind is obsessed or besieged by such thoughts, fears or impulses.

Janet advanced a step by recognising what he called a "splitting of consciousness" or "mental dissociation" induced by a "lowering of the psychological tension," the psychical response of a psychasthenic to his environment being inadequate.

Freud regards the compulsion neurosis as a disease of the unconscious. From his laborious investigations on individual psychology by means of psycho-analysis he interprets the condition on a purely sexual basis and regards the symptoms as substitutions for certain repressed sexual ideas and emotions. They are due to failure of the repression, whereby the sexual ideas are enabled to find conscious expression in symptom formation. Moreover, two characteristics of these patients have emerged. One is a special aggressiveness during childhood which mainly shows itself in an intensive activity of the impulse to learn about sexual matters and the mystery of birth by looking, gazing and peeping on the one hand and by aggressive questioning on the other; the other is an incessant conflict between love and hatred, a continual existence of these two emotions in the highest intensity side by side toward the same persons. An intensive elaboration of the feelings of affection and hostility towards the parents, brothers and sisters, in conjunction with infantile sexual curiosity regarding sex and birth processes, forms the essential nuclear complex of this psychoneurosis.

Love and hate cannot, of course, exist together indefinitely and the conflict is ultimately resolved by one or the other, usually the hatred, being repressed into the unconscious.

The symptoms of the psychoneurosis then take their origin from a conflict between conscious attachment and unconscious sadism. The sexual experiences of the early childhood of these patients are pleurably accomplished aggressions and pleurably experienced participation in sexual acts. In this psychoneurosis, therefore, the repressed complex is one of sexual activity, whereas the repressed complex in hysteria is one of sexual passivity.

It is true that by psycho-analysis of such patients one is ultimately able to disclose some infantile sexual experience in which the patient played a passive rôle and which awakened his interest in sexual matters. This in turn is followed by actions of sexual aggression. This period is brought to an end by the appearance of sexual maturity often self-ripened. Reproaches then attach themselves to the sexual memories and they are

repressed and replaced by primary symptoms of defence. The patient is apparently normal and healthy, but in reality he is in a state of successful defence, the only symptoms being scrupulousness, shame and diffidence.

The next period is failure of the defence with return to consciousness of the repressed reminiscences and revival of the reproaches, but always in a changed form, the change being necessary in order to escape the watchfulness of the censor. There is a compromise formation between the repressed and the repressing ideas, this compromise formation becoming conscious as an obsession or an obsessive effect.

The form which the disease assumes depends upon whether it is the memory of the reproachful acts themselves which forces itself upon consciousness or the memory of the reproach affect, the emotion of self-reproach. In the first case the feeling tone is merely one of discomfort; if the memory of the reproachful acts had not been distorted, the feeling tone would of course be one of reproach. In the second case, the reproach affect is changed into some other unpleasant emotional feeling, such as shame, hypochondriacal, social or religious anxiety, fear of being observed or tempted, and so forth. You will easily see that this symbolisation of the reproach affect renders diagnosis very difficult.

Besides these compromise symptoms there are others which Freud groups together under the name of "secondary defence." These are protective measures against the obsessions, actions which, if performed at the time of the reproachful action, would have prevented it from occurring. Many patients perform ceremonials which are apparently meaningless until the forgotten action against which they are directed is known.

The patient has no conscious knowledge of the action against which his obsessive acts are directed, and he explains them to himself in some transcendental or abstract thought—(1) an actual occurrence is put in place of a past experience and (2) something sexual is replaced by something analogous, but non-sexual.

Dr Ernest Jones, who is the greatest English authority on the psychology of the neuroses, has discovered that the origin of the repressed hatred in the compulsion neurosis is traceable to anal eroticism in infancy. Compulsory education of the sphincters in opposition to anal erotic tendencies, such as were described in the first lecture, is responsible for the patient's

conflict with the outer world. The anal eroticism is, of course, repressed in very early infancy; but the hatred, usually of one or other parent, remains for a considerable time. Our conclusion, therefore, with regard to the psychoneurosis is that an obsession represents a compensation or substitute for an unbearable sexual idea of *very early* infancy, and takes its place in consciousness, whereas a hysterical symptom is the realisation of an unconscious fancy serving as a wish-fulfilment and corresponds to the return of a sexual gratification which was real in *later* infancy, but has been repressed since then, the obsession being due to a conflict between a repressed idea and the repressing forces, and the hysterical symptom to a conflict between the repressed idea and an inhibition.

Psycho-analysis has proved the only really successful method of treating the compulsion neurosis, but hypnotism may be used in much the same way as for hysteria, viz.: (1) for suggestion, (2) to recover buried memories, and (3) to obtain an emotional reaction to a repressed complex.

Some cases of obsession may be traced in the first instance to some forgotten incident to which the patient did not react at the time; with the result that there appears to be a certain amount of latent emotion, floating about free, as it were, and unattached. It then becomes attached to other subjects, people, situations and ideas, so as to give them some unusual and unintelligible significance to the patient. The mechanism is known as "transvaluation."

For example, a patient came across some broken glass in some mashed potato she was eating. The occasion was forgotten, but reappeared years later in the disguise of a fear lest poisons in glass bottles should escape and become attached to her person. On account of this, she would never pass a chemist's shop on the same side of the road. Such a patient might have been hypnotised and made to live over again the unfortunate meal, this time reacting with an emotion of terror, so that such emotion should not in future become attached to glass bottles. As a fact, she was psycho-analysed, and deeper sources of the psychoneurosis were discovered.

Dubois' method of treatment by appeal to the patient's reason may be dismissed as grotesque and possessing no novelty, for has not every young asylum medical officer tried to argue with

patients that there is no ground for their morbid fears or delusions, and has he not invariably learned that such a method is futile?

"Resynthesis" and "transmutation" are more rational. For both of these it is necessary that the physician should first devote a considerable amount of time to obtaining a complete history of the patient's life, the ultimate object of the first method (resynthesis) being to direct the patient's attention to other points of view than he at present takes, and that of the second method (transmutation) being to divert his interests and energies into new channels, these being selected in sympathy with his natural trends. The latter treatment is known in America as "side-tracking" and is really an attempt at what I have already described as "sublimation." Both resynthesis and transmutation have been characterised as methods of re-education. In resynthesis some workers, especially of the French school, employ such artificial aids as hypnosis and crystal gazing.

Time will not allow me to discuss these modes of treatment in detail. I must proceed to some consideration of the psychoses.

*Maniacal-depressive insanity* is a disorder in which the patient is liable to attacks of mania, melancholia or stupor, these being in some cases accompanied with, or replaced by, some delusional state.

As I have already stated, it is useless to attack this psychosis while the patient is passing through one of these acute phases of the disorder. Radical treatment of the disease must be undertaken during a period of sanity or, as the populace would say, during a "lucid interval." It is interesting, moreover, that psychoanalysts, who have had experience of these cases, have come to the conclusion that a very short analysis is most successful in effecting a cure, while a complete analysis, in the Freudian sense, only leads to relapse; but, as I said before, many psychoanalysts of experience differ from me on this point.

A case of my own will serve as an example. She was married in 1910 at the age of 37. In January 1911 she began to lose flesh, suffered from amenorrhœa, which continued until the beginning of April, when she gradually became more and more excited, and remained in a state of acute mania from which she recovered at the end of July. Exactly the same series of events took place in 1912 and 1913. In January 1914 she again began to lose weight. She consulted me and I analysed her for not

more than an hour and a half, during which time I discovered a couple of repressed complexes. She afterwards improved in health, had no attack last year, and this year she is doing her ordinary work with no signs of failing health. I regret that I can give no further details, partly because time will not permit, but also for the stronger reason that the patient might be recognised. I can say, however, that the repressed complexes were not of infantile origin.

Dementia præcox has been most carefully studied by Jung from a psychological point of view and the conclusion at which he arrives is that there is a remarkable psychological resemblance between dementia præcox and hysteria. The complexes and the mechanism of their repression are exactly the same, yet hysteria is an eminently curable disease, while dementia præcox is conspicuously incurable. The catatonic symptoms can easily be conceived as purely repressive devices, and it has been definitely proved in some cases that certain stereotyped actions are distorted representations of the fulfilment of repressed wishes; but at the same time, we must not lose sight of the fact that these same symptoms also occur in certain organic cerebral diseases, whose origin is at least much more organic than psychical. Again, the question is not yet absolutely settled whether dementia præcox is a psychogenic or organic disease. Alzheimer and others have described areas of gliosis in the deepest layers of the cortex, others have discovered fatty degeneration of the nerve cells, others again have observed cerebellar changes, all of which might very well be due to excess or defect of certain internal secretions.

This idea, surmised by Kraepelin, has been rendered probable by Mott's discovery that certain glands possessing internal secretions, especially the ovaries and testes, are more or less atrophied in dementia præcox. On the other hand, Jung appears to have cured or, at least, considerably ameliorated, some cases of dementia paranoïdes by psycho-analysis only.

Jung recognises all these difficulties and gets out of them by supposing that the mental conflicts of dementia præcox give rise to toxins which act deleteriously upon the cerebral substance. I must confess that to me this idea does not appeal very strongly; but Kraepelin, who will have nothing to do with psycho-analysis, is curiously enough rather pleased with the suggestion.

The chief characteristic of patients suffering from dementia



præcox is that they are living a dream and, in the end, completely retire from the world of reality (autism). Up to the present very little psychological investigation of the disease has been made; but we hope to learn much from the investigation now going on at Zurich. For the present, therefore, we must regard the pathology of dementia præcox as still undetermined. By various psychological means, especially by resynthesis, attempts are made to reform the mental structure of these patients in the early stages; but hitherto the results have not been encouraging.

The last disease I must submit for your consideration is Paranoia. This is a mental disorder of the fourth or fifth decade as a rule and it is characterised by the progressive development of systematised delusions. The patients, being of a suspicious temperament, see hidden meanings in incidents which possess no unusual value for the ordinary man and from the inevitable accumulation of such misinterpretations they evolve a system of delusions which vary from patient to patient.

The cases are divided into two main classes:—

(1) The eccentrics or mattoids, the borderland cases of insanity, including faddists and cranks of all kinds, anarchists, revolutionaries, Christian Scientists, vegetarians, anti-vaccinationists, anti-all-sorts-of-other-things and, in general, people who get a distorted view of life through attaching undue importance to minor incidents (this class has not been submitted to modern psychological investigation).

(2) The egocentrics, including patients who suffer from delusions of persecution, jealousy, exaltation and ill-health (hypochondriacs). To this class also belong patients who believe that some person of the opposite sex makes signs that they are in love with them, and also the patients who believe that they have some religious mission to perform.

All these patients are perfectly clear mentally, have no hallucinations, behave well and can think intelligently apart from their particular delusions; but they are firmly convinced that there is nothing mentally wrong with them and therefore always feel aggrieved when they are involuntarily placed under care for their malady.

Since the advent of our new psychiatry many patients of this class have been analysed by modern psychological methods all over the civilised world and the outcome has been the

remarkable discovery that paranoia is a psychosis erected on the invariable basis of repressed homosexuality. Naturally enough the idea that a person has homosexual inclinations is usually repugnant to him, he refuses to admit it to himself and it is repressed into the unconscious. Should such repression fail, the homosexual complex reappears in consciousness in the disguised form of paranoia, or, I may add, as dementia paranoides, for it has been shown that the same psychical mechanism is at work in this variety of dementia præcox, designated by Kraepelin in his most recent edition, by the way, as "paraphrenia."

Freud himself has rendered one of these latter cases classical by his analysis of it. Dr David Paul Schreber, a lawyer who was sufficiently eminent to have become President of the Saxon Senate, was under observation from 1893 to 1902 for dementia paranoides. He was released as the result of a legal decision in which the delusions are thus summarised: "He considers himself called to save the world and to bring back the lost state of beatitude. This he could do only by changing himself from a man to a woman." The following year Dr Schreber published a clinical history of his own case, which Freud subsequently analysed with notable psychological insight and showed that the patient was a repressed homosexual.

The researches in paranoia are particularly interesting in that they throw a certain amount of light on the mechanisms of unconscious reasoning. Unconsciously the paranoiac always starts with the premise, "I love the man" (I am assuming the patient to be a male). The arguments in the several varieties of paranoia then run as follows:—

*Persecuted Paranoia.*—"I love the man"—an intolerable idea, therefore becoming "I do not love him; I hate him." This by projection becomes "He hates me," "I am persecuted by him."

*Exalted Paranoia.*—"I love him"—again an intolerable idea, therefore "I do not love him, I love myself." This by projection becomes "Everybody loves me," "I am a great person."

*Religious Paranoia.*—"I love him," being intolerable, becomes "I love Him" (spelt with a capital H), meaning "I love God." This by projection becomes "God loves me," "I am the chosen one of God."

*Amorous Paranoia.*—The intolerable "I love him" becomes "I do not love him, I love her." This by projection becomes "She loves me."

*Jealous Paranoia.*—"I love him," as usual, is replaced by "I do not love him; *she* loves him."

The mechanism of hypochondriacal paranoia is similar to that of exalted paranoia, "I love myself" becoming "I must take care of myself," and querulant paranoia is only a special variety of persecuted paranoia.

Although psycho-analysis has been successful in elucidating the psychology of this disease, the method usually fails as a mode of treatment. I understand, however, that some psychoanalysts have effected a cure, and many have alleviated the patient sufficiently to enable him to go about his business with a certain degree of mental comfort without molesting those people with whom he is brought into contact.

Recovery is said to have been effected in a few cases of fairly recent origin by a method which somewhat resembles psycho-analysis, but differs from it in that the physician seeks, in the first instance, to obtain a positive transference before tackling the disease itself. He gets the patient to give a complete history of his life, endeavouring meanwhile to discover incidents and characteristics which have a bearing on his delusional state and to disclose them. During the whole of this process, which takes twenty to thirty hours, he accepts the patient's point of view throughout, until he ultimately gains his whole confidence and convinces him of his friendship; without, however, actually encouraging his delusions or agreeing with every word he says. Then, when a suitable opportunity offers, he suggests that the patient may have come to an erroneous conclusion about some quite insignificant occurrence. After a few more sittings, as opportunity offers, he points out another minor occasion when the patient might have been mistaken. So he goes on until he sees his chance for tackling the main delusion and pointing out that even here he may also be mistaken. The physician takes advantage of any attitude of doubt and completes the cure by "therapeutic conversation." The whole procedure requires an enormous amount of tact, patience, and skill. Moreover, the physician must be familiar with those mechanisms of paranoia which have been discovered by the psycho-analytic method.

The main object of these lectures has been, however, to expound the principles of psycho-analysis proper, its technique, the psychological mechanisms which it has disclosed and the

bearing of these mechanisms, not only on 70 per cent. of the 160,000 patients in the asylums of Great Britain, but also an enormous number of people pursuing their ordinary vocations in spite of curable mental worries or spending an enormous proportion of their time and income in nursing homes. Physicians who will undertake the radical cure of these poor sufferers will earn the gratitude of society as well as that of the patients, which is always unbounded; but he must be a man of courage, for he will have to face the opposition of the "herd" for many years to come. In spite of all we may say, the subject of sex will remain taboo, yet no physician of experience can deny the enormous rôle played by sexual conflicts in the genesis of the neuroses. I do think that cases sometimes occur in which the psycho-genetic conflict is non-sexual, but they are so rare that I can see the psycho-analytic literature of the future augmented by reports of such cases as curiosities.

Although I attach so much importance to psycho-analysis, I hope that no words of mine will detract from the systematic investigation of cases by other methods. It would be deplorable, for instance, if attention to psychological investigation should detract from the work of the clinical laboratory and thus allow a positive Wassermann reaction, so common in dementia præcox for example, to be overlooked.

It has often been said that the frequency of mental disease is due to the effect of civilisation, to the hurry, bustle and struggle for existence associated with urban life, to defective sanitation, insufficient sleep, overwork, poverty, brain-fag, education, and a host of other things incident on civilisation. With all our modern conveniences, the poor law, hygienic surroundings, hospitals, comfortable railways with restaurant cars and sleeping accommodation, typewriters and telephones, such a view is manifestly erroneous.

That insanity is the result of civilisation is obvious to anybody who looks the facts in the face; but psycho-analysis has revealed that the essential factor is not hurry, bustle, and brain-fag, but the repression of the instincts, enforced by civilisation. Recognising this fact we can now see the solution of a host of problems in other domains of mental disease. General paralysis, for example, has been ascribed to the effects of civilisation and syphilisation because, although syphilis (an acknowledged factor in the

causation of general paralysis) is rife in certain uncivilised communities, general paralysis is rare. The explanation is now forthcoming, for we recognise that the essential difference between civilised and uncivilised communities lies in the fact that the instincts are much more repressed in the latter. The recognition of this fact has a practical bearing on both the etiology and treatment of mental disorders.

Our personal impulses tell us to eat, drink and be merry, and to gratify our predatory and sexual instinct, but the herd instinct tells us to be above all such animal passions. The Church, as the highest authority of the herd, says that there must be many days of abstinence and fasting throughout the year in order to subdue the flesh; the Church again and many physicians advocate total abstinence from alcohol; instead of being merry, society dictates that we should be sedate. Our predatory instincts are often stigmatised as cruel, and the openly avowed and ostensible attitude of the populace toward sexual matters is restriction, if possible, to abolition and extinction.

Such limitations imposed by society upon the mighty impulses of the sexual instinct cannot be tolerated with impunity by any normal individual; for a man's sexual activity serves as his standard for all his other activities and, if it is unnaturally repressed, he becomes just as reconciled and submissive in his whole career; while a person who is so venturesome as to gratify his instincts exhibits the same bold enterprise and energy in overcoming the difficulties of everyday life.

Much less can one who possesses a hereditary predisposition to neurosis or psychosis endure such restraint of his animal instincts, for in such a person it must inevitably lead to mental disorder.

It is not to be supposed that the prophylaxis of insanity lies in letting loose the reins of licentiousness and depravity. The problem is far more intricate than this, and it is not likely that it will be solved in the present century, much less in our own time. The mystery at present surrounding sex and birth problems must be removed by systematic education of the young in such matters, early marriage must be made more possible than existing circumstances will permit, and old men and parents will have to remember the days of their own youth when they enact the laws which are to govern society. Moreover, the whole populace

will have to be educated in such matters before any serious change can be accomplished.

The idea seems Utopian, and I cannot refrain in this connection from divulging a remark made to me in private conversation many years ago with one of the greatest geniuses that ever lived, Dr Hughlings Jackson. I forget what was the exact topic under discussion, but he said, "I suppose, Stoddart, that the end of the human race will arrive by over-development of the brain at the expense of the testicles." You must remember that he was primarily a neurologist and, as such, a materialist. Translated into modern language, that remark means, "The end of the human race will arrive by the development of culture at the expense of animal passions." Let us hope that such a calamity may be averted!

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## Abstracts.

### ANATOMY.

**ON THE MECHANISM OF MORPHOLOGICAL DIFFERENTIATION IN THE NERVOUS SYSTEM.—I. THE TRANSFORMATION OF A NEURAL PLATE INTO A NEURAL TUBE.** OTTO C. GLASER, *Anat. Record*, 1914, viii., Dec., p. 525 (3 figs.).

HIS considered that the reason why the primitive plate changed into a tube was because the nervous system, during the period of folding, grew faster than the surrounding tissues with which it was continuous. Roux, however, cut the neural plate from its surroundings, and found that it still folded in the normal manner, even when cut transversely into a number of segments. He concluded that the nervous system must be "self-differentiating" or self-folding.

The author finds that cell division is not responsible for this folding process. If the folding nervous system be divided into an inner and an outer zone, an outward migration of nuclei during involution is demonstrable. During involution, no doubt, the outer zones increase at the expense of the inner, but the exact extent of this is difficult to determine, since the inner zones also increase. This "growth" of the nervous system is not the result of the synthetic processes ordinarily associated with cell-multiplication, but is the outcome of water absorption. The folded nervous system contains 80 per cent. of water and 20 per

cent. of dry substance; the entire embryo, on the other hand, has only 58 per cent. of water and 42 per cent. of dry substance. For the isolated yolk-sac of the frog's embryo, the corresponding figures are 55 per cent. and 45 per cent. respectively. During involution, therefore, differential water absorption takes place in the nervous system. The real significance of the water absorption seems to lie in the fact that it is a symptom of a surface effect which involves apparently a change in the permeability of the neural plate cells. The surface affected is more likely to be the one bounded by the extra-mural intra-embryonic environment than any other. The surface effect indicated by the absorption of water during folding may very possibly result in a mechanical weakening from which the involution of the neural, and the invagination of the gastral plates follow, not only automatically, but with the demonstrated autonomy.

A. NINIAN BRUCE.

**A PRELIMINARY REPORT ON THE ASYMMETRY OF THE**  
(274) **BASAL GANGLIA.** RICHARD W. HARVEY, *Anat. Record*, 1913  
vii., p. 17 (6 figs.).

NINE brains were examined, and it was found that in 78 per cent. the nucleus caudatus was larger on the left side than on the right. The increased size of the left caput nuclei caudati seems to determine the greater volume of the left anterior horn of the lateral ventricle. The excess volume of the anterior horn of the left lateral ventricle corresponds in all cases examined with the increased size of the left caput nuclei caudati. The right nucleus lentiformis exceeds the left in about half the series of brains, and the left thalamus exceeds the right in a like number. The inter-relations of the basal ganglia and the internal capsules may determine the morphological characters of these structures.

In conclusion, it seems possible that not only may the preponderance of a hemiserebrum depend on the pallium, but also on the asymmetry of the basal ganglia.

A. NINIAN BRUCE.

**THE PERCENTAGE OF WATER IN THE BRAIN OF THE**  
(275) **SMOOTH DOG-FISH, *MUSTELUS CANIS*** GEORGE G. SCOTT,  
*Anat. Record*, 1914, viii., p. 55.

THE human brain at birth contains about 88.3 per cent. of water, 81.1 per cent. at two years of age, 79.2 at five years, and 77.0 per cent. at twenty-five years (mature).

The author finds that it is not possible to distinguish by weight between the male and female brain in the smooth dog-fish, and that the percentage of water shows no difference in the two conditions. He finds, however, that there is not a gradual

diminution in the percentage of water as growth proceeds. As it is probable that the change in water content of the central nervous system is correlated with growth intensity, it is presumed that the greatest change in the smooth dog-fish takes place *in utero* and in man *ex utero*. Also mammals are characterised by determinate growth; as soon as maturity is reached, the organs have reached their size limit. Fishes, on the other hand, have indeterminate growth, *i.e.*, they grow as long as they live.

A. NINIAN BRUCE.

**ON THE VASCULARISATION OF THE SPINAL CORD OF THE**  
(276) **FIG.** E. R. HOSKINS, *Anat. Record*, 1914, viii., July, p. 371 (5 figs.).

PIG embryos were injected while living with warm india ink, diluted one-half with weak ammonia water, through the umbilical artery. The spinal cord was then examined after clearing in oil, or by means of serial sections.

Four main longitudinal arterial systems are present—one, median on the ventral surface, one on each dorso-lateral surface, and one median on the dorsal surface. The veins run in three principal longitudinal systems, two dorsal and one ventral. These are all described at some length.

The dorsal rami of the primitive arterial tract, and other rami from the capillaries in its immediate vicinity, enter the cord, forming an undifferentiated capillary plexus, and this plexus later becomes differentiated into arteries and veins. The blood vessels seemed to appear first not as solid but as hollow vessels.

It is generally stated that the spinal artery arises from the vertebral arteries, and is reinforced by segmental spinal arteries. It is rather to be considered that this artery arises from the segmental spinal arteries, and anastomoses with, or is reinforced by, the vertebrals.

A. NINIAN BRUCE.

**THE DEVELOPMENT OF THE HYPOPHYSIS OF AMIA CALVA.**  
(277) P. E. SMITH, *Anat. Record*, 1914, vii., Nov., p. 499 (10 figs.).

THE development of the hypophysis in ganoids has been a matter of dispute, the confusion being partially due to the developing adhesive organ, but primarily to the difficulty of distinguishing between the ectoderm and the entoderm. This union is intimate from the first appearance of the hypophysis, and it is only by noting from the first the caudal growth of the basal layer of the ectoderm to form a hypophysial rudiment, that the origin of this gland can be given. Prather had described the hypophysis in *Amia* as entirely entodermal in origin, but the author finds that the process differs in no essentials from that in the other teleosts and the amphibia.

A. NINIAN BRUCE.



**A TRANSITIONAL TYPE OF CERVICAL RIB.** BARTON G. DUPRE.  
(278) **WITH A COMMENTARY.** T. WINGATE TODD, *Anat. Record*,  
1914, viii., June, p. 313.

WHATEVER the radiographic appearance, there is no such thing as a true enlargement of the transverse processes of the seventh cervical vertebra. The so-called enlargement is, in every instance, a rudimentary rib.

Certain cases which exhibit symptoms of "cervical rib," involving the seventh cervical nerve root, are aptly illustrated by the present instance, in which the lowest trunk of the brachial plexus lay beneath the rudimentary rib, and therefore possibly less exposed to a mechanical lesion. The seventh root, on the other hand, contrary to the usual condition found in dissection, lay upon and grooved the rudimentary rib on each side.

A. NINIAN BRUCE.

**ON THE WEIGHT OF SOME OF THE DUCTLESS GLANDS OF THE**  
(279) **NORWAY AND OF THE ALBINO RAT ACCORDING TO SEX**  
**AND VARIETY.** SHINKISHI HATAI, *Anat. Record*, 1914, viii.,  
Dec., p. 511.

IN both the Norway and albino rats the suprarenal glands of the males are considerably smaller than those of the females. When, however, these two forms of rats are compared, both sexes of the Norway rats have suprarenals considerably heavier than those of the like sexes of the albino.

A sex difference is noted in the weight of the hypophysis in both the Norway and albino rats. The male hypophysis is lighter than that of the female. However, when these two forms of rats are compared, the hypophysis of the Norway is found to be smaller than that of the albino rat; the greater difference being in the case of the female.

Neither in the Norway nor the albino rat is there a sex difference found in the weight of the thyroid. Moreover, there is no weight difference in the thyroid according to variety in these two forms of rats.

The testes and ovaries of the Norway rats are heavier than those of the albino rats.

The difference found between the Norway and albino rats with respect to the weight of the ductless glands seems to be the result of a response to the complex conditions represented by domestication.

A. NINIAN BRUCE.

## PHYSIOLOGY.

**HYSTERIA AS A WEAPON IN MARITAL CONFLICTS. A.**(280) MYERSON, *Journ. Abnorm. Psychol.*, 1915, x., April-May, p. 1.

THE author relates a case in which a woman had throughout her married life used hysterical symptoms (varying from slight to severe) as a weapon, though not with conscious purpose, for the gaining of her point in whatever quarrel came up between her husband and herself. The symptoms were cured by indirect suggestion and re-education.

H. DE M. ALEXANDER.

**ANALYSIS OF A SINGLE DREAM AS A MEANS OF UNEARTH-  
(281) ING THE GENESIS OF PSYCHOPATHIC AFFECTIONS.**MEYER SOLOMON, *Journ. Abnorm. Psychol.*, 1915, x., April-May, p. 19.

FREQUENTLY, in the hopeless tangle of symptoms, complaints, and disconnected facts in the history as originally obtained, especially in old-standing cases, one does not really know just where to begin, what to start with in the first efforts to struggle with the problem of the ultimate genesis and evolution of the condition presented by the patient. The author illustrates by four examples that by a most thorough and far-reaching analysis of a single dream it is possible, by following out to the ultimate ends the various clues which are given and the various by-paths which offer themselves, to root up the entire life history of the dreamer. The analysis takes the form of ordinary conversation and introspection in the normal waking state.

H. DE M. ALEXANDER.

**AN ACT OF EVERYDAY LIFE TREATED AS A PRETENDED  
(282) DREAM AND INTERPRETED BY PSYCHOANALYSIS.**RAYMOND BELLAMY, *Journ. Abnorm. Psychol.*, 1915, x., April-May, p. 32.

THE author, by illustrated examples from his own experiences, tries to show that any situation or experience can be analysed with as good success as a dream, and that a dream may be made to mean anything. The Freudians vehemently deny that any of the results of dream analysis are suggested into the mind of the dreamer, but the evidences are all on the other side. Whatever we wish to make out of a dream—the dramatisation of a fear, a joy, a joke (really this is what the Freudians often do), a tragedy, anything that can be suggested—the result can easily be accomplished if only we be allowed the use of Freud's mechanisms and a moderate amount of symbolism.

H. DE M. ALEXANDER.

## PATHOLOGY.

**LESIONS OF THE THYROID GLAND IN BASEDOW'S DISEASE.**

(283) (*Lésions du corps thyroïde dans la maladie de Basedow.*)  
GUSTAVE ROUSSY and JEAN CLUNET, *Rev. Neurol.*, 1913, xxi,  
Juillet 15, p. 1 (3 figs.).

THE authors examined the thyroid gland in 5 cases of Basedow's disease, 3 cases of goitre with Basedow's symptoms, and 2 cases of cancer of the thyroid with Basedow's syndrome.

In the 5 cases of genuine Basedow's disease there was found a hypertrophy and proliferation of the cells, which tend to become cylindrical and to give rise to intra-acinar growths. The lumen of the acini is reduced, the cells lining them proliferating rapidly. The colloid stains more faintly, both with basic and with acid dyes, and is thicker and less friable. The stroma is diminished, the lymphoid elements are increased, and the glandular lobules are increased in size and in number. In some of the lymphoid follicles small collections of degenerating epithelial cells were seen, which resembled Hassal's corpuscles in the thymus.

In the 3 cases of goitre with Basedow's symptoms the microscopic appearance showed great variations, parts showing enormous colloid vesicles, sclerosis or hyperplasia, while other parts showed the typical appearance described above as characteristic of true exophthalmic goitre.

In the 2 malignant cases the symptoms coincided with the growth. In the first case the appearance was similar to that of a true Basedow's disease, except that the capsule was invaded by the growth and metastases were present. In the second case there was found embedded in the normal glandular tissue a dense mass of proliferating cylindrical cells in which all acinar differentiation had disappeared, but which were secreting colloid into the clefts between the cells.

A. NINIAN BRUCE.

## CLINICAL NEUROLOGY.

**TENDON AND CONTRALATERAL REFLEXES AND SPASMODIC**

(284) **ASSOCIATED MOVEMENTS.** (*Sur les réflexes tendineux et périostiques contralatéraux et les mouvements associés spasmodiques.*) NOICA, *Rev. Neurol.*, 1913, xxi., Juillet 15, p. 6.

IN a case of hemiplegia, or any other lesion of the upper motor neurone type, the reflex activity of the paralysed side is exaggerated. As a result of this exaggeration, the reflex excitations on the unaffected side are not strictly limited to that

side, but radiate easily to the opposite side of the cord, producing contralateral reflexes, *e.g.*, the contralateral adductor reflex on percussing the patellar tendon on the sound side. Such a result will be caused by any stimulus, whatever its origin, not only those coming by reflex paths, either tendon or periosteal, but also those coming from the cerebral cortex and concerned in voluntary movements. Such stimuli also radiate to the affected side of the cord and produce associated movements. The mechanism of associated movements and contralateral reflexes is thus the same (*cf. Review*, 1915, xiii., p. 101).

A. NINIAN BRUCE.

**CONTRIBUTION TO THE SYMPTOMATOLOGY OF ORGANIC (285) PARALYSIS OF CENTRAL ORIGIN IN THE UPPER LIMBS.** (*Contribution à la symptomatologie de la paralysie organique d'origine centrale du membre supérieur.*) J. M. RAÏMISTE, *Rev. Neurol.*, 1913, xxi., Mai 30, p. 652 (2 figs.).

THE patient lies on his back, and the arm rests on the bed by his side. The forearm and hand are then raised to the vertical position, the palmar surface of the hand being turned inwards. If the support to the hand be removed, and the patient's attention be distracted, it still maintains its vertical position, unless the limb is the seat of an organic paralysis of central origin. If such should be the case, the hand falls. This sign is not present in cases of paresis of the upper limb, unless the patient's attention is distracted. It is present during hysterical paralysis, unless the attention of the patient is distracted by some voluntary activity, when it is absent during this period.

A. NINIAN BRUCE.

**INVERSION OF THE RADIAL REFLEX IN TRAUMATIC LESION (286) OF THE SIXTH CERVICAL ROOT.** (*Inversion du réflexe du radius par lésion traumatique de la VI<sup>e</sup> racine cervicale.*) SILVIO RICCA, *Rev. Neurol.*, 1913, xxi., Juin 15, p. 735.

A MAN, aged 34 years, was struck on the head by a heavy weight of earth. He did not lose consciousness, but all four limbs became immediately paralysed. The paralysis passed off very quickly, except in the left arm, which remained weak, with the paresis most marked in the deltoid. The reflexes were unaffected in the right arm, but in the left the biceps reflex was absent, although frequently on tapping the biceps tendon a contraction of the triceps occurred and the radial reflex was inverted. The triceps reflex was active, and there were no sensory changes.

An X-ray showed marked injury to the fifth and sixth cervical vertebrae. Two lesions were diagnosed; the first, a medullary contusion in the upper part of the cervical enlargement, causing the transitory paralysis of all four limbs, and the second, a more serious injury to the sixth cervical root, causing the symptoms in the left upper limb. The case is interesting as affording evidence of the localisation in the cord and mechanism of inversion of the radial reflex.

A. NINIAN BRUCE.

**ON THE IMPORTANCE OF VASCULAR LESIONS ASSOCIATED  
(287) WITH LESIONS OF THE PERIPHERAL NERVES IN  
WOUNDS OF WAR.** (De l'importance des lésions vasculaires  
associées aux lésions des nerfs périphériques dans les plaies de  
guerre.) H. MEIGE and ATHANASSIO-BÉNISTY, *Bull. et mém. Soc.  
méd. Hôp. de Paris*, 1915, xxxix., p. 208.

THE association of vascular lesions with nervous lesions may be suspected from the almost constant presence of the following clinical signs:—1. Special vasomotor and trophic disturbances, viz., violet colour of the skin, coldness of the affected limb, cessation of sweating, and well-marked subcutaneous œdema. 2. Changes in the blood pressure. The pulse is imperceptible. With Pachon's sphygmomanometer the maximal pressure is much diminished. 3. Profound sensory disturbances, both superficial and deep sensibility being considerably affected. Most of the wounds in the writers' cases had bled considerably, and it is probable that the symptoms were due to the application of too tight compression maintained too long.

J. D. ROLLESTON.

**A CASE OF INFANTILE HEMIPLEGIA AFFECTING THE LEFT  
(288) HALF OF THE BODY, WITH CONSIDERABLE UNDER-  
DEVELOPMENT OF THE LEFT UPPER EXTREMITY.  
JACKSONIAN CONVULSIONS AFFECTING THE PARA-  
LYSED UPPER EXTREMITY; PETIT MAL.** E. G. FEARN-  
SIDES, *Brit. Journ. Child. Dis.*, 1915, xii., p. 136.

A RECORD of a case in a boy aged  $7\frac{3}{4}$  years, in whom the above phenomena were probably due, not to polioencephalitis, as was at first thought, but to some local septic cerebral trouble following chronic otitis media. Wassermann's reaction in the serum was negative.

J. D. ROLLESTON.

**INFANTILE HEMIPLEGIA.** (A case with unusual onset and obscure (289) etiology.) HAROLD W. WRIGHT, *Journ. Amer. Med. Assoc.*, 1915, lxiv., May 8, p. 1577.

A MALE infant, aged 19 months, was brought to hospital on account of paralysis of the right side. There was no history of syphilis, tuberculosis, or insanity. The mother was alcoholic. While cutting a tooth, the child was found with a partial paralysis of the right side of the mouth, arm, and leg. There were no convulsions, and the paralysis passed off next day. It recurred three weeks later, disappeared in a week, and returned in about ten weeks together with disturbance of vision and of swallowing, and difficulty in turning the head to the right.

On examination, a positive Babinski reflex was present on the right side, with a spastic paralysis of the right arm and leg. There were no sensory disturbances nor ataxia, the right pupil was larger, but both reacted to light. The fundus of the eyes showed pallor of the optic discs, which was interpreted as evidence of a previous choked disc. Lumbar puncture was unsuccessful.

It was considered that the lesion was a hæmorrhage from the lenticulo-striate artery into the middle portion of the left internal capsule and lenticle, with subsequent clot formation causing pressure of varying degree, and finally destruction of some of the fibres, possibly of a recurrent type, recurring at each attack of paralysis. The findings in the optic fundi were caused by pressure of the clot on the optic tracts, or interference with the circulation in the optic nerves. The restricted area contra-indicated acute encephalitis with hæmorrhage.

A. NINIAN BRUCE.

**A CASE OF ACUTE ASCENDING MYELITIS IN THE COURSE (290) OF SECONDARY SYPHILIS. BACTERIOLOGICAL AND ANATOMICAL STUDY.** HENRI BARTH and ANDRÉ LERI, *Rev. Neurol.*, 1913, xxi., Oct. 15, p. 393.

A WOMAN, aged 17, who had always previously been in good health, contracted syphilis and gonorrhœa in July 1902. A chancre developed, and she received appropriate treatment. In January 1903 she woke up one morning with intense headache, followed by vomiting and fever. Two days later complete paraplegia developed. Next day the left arm also became paralysed, and the day after this the right arm was affected, together with respiratory and cardiac disturbances of bulbar origin. Next day still the movements of the neck and phonation became involved. Retention of urine was present at first, later incontinence. Paresthesia preceded locally each attack of

paralysis, but there was no alteration of objective sensibility. After active mercurial treatment, the condition remained stationary for twelve days, death occurring suddenly on the seventeenth day.

Lumbar puncture gave issue to a fluid which showed a very great and almost pure lymphocytosis, and in addition gave pure cultures of a *Micrococcus tetragenus*. This organism could also be cultivated pure from the blood.

Microscopic sections of the cord showed multiple hæmorrhages, congestion of the vessels, lymphocytic infiltration of the tissues, thickening of the meninges, and all the other signs of a meningo-myelitis of vascular origin, the meningo-myelitis and vascular changes having all the characteristics of syphilitic disease.

Of 37 cases of acute syphilitic myelitis previously recorded, 11 developed in the same year as the infection, 12 in the second year, and 1 in the third year. The most frequent form was the classical transverse myelitis with paraplegia, but in 15 cases an ascending myelitis was present. In several of the cases the *Micrococcus tetragenus* was also found. The significance of the association of the tetragenus with the spirochæte in such cases is still to be determined, but it is rather a saprophytic than a pathogenic organism, and possibly acts as a sensitiser, preparing the ground for the precocious action of the spirochæte.

A. NINIAN BRUCE.

**A CASE OF MYELITIS IN A CHILD.** H. T. ASHBY, *Brit. Journ.* (291) *Child. Dis.*, 1915, xii., p. 142.

A RECORD of a case in a boy, aged 5½ years, which proved fatal in about three weeks. There had been no previous infectious illness. There was no improvement with potassium iodide, no family history of syphilis, and Wassermann's reaction was negative. There was no spinal caries nor injury, and the case was quite unlike polio-myelitis or a spinal growth. The disease seemed to spread up the cord quickly at first, became stationary for a while, and then advanced until the vital centres were affected.

J. D. ROLLESTON.

**ARAN-DUCHENNE AMYOTROPHY FOLLOWING A DIFFUSE**  
(292) **MENINGO-MYELITIS.** (Amyotrophie Aran-Duchenne consecutive à une méningo-myélite diffuse.) A. SOUQUES and A. BARBÉ, *Rev. Neurol.*, 1913, xxi., Juillet 30, p. 57 (11 figs.).

THE case of a man, aged 54, who presented the symptoms of an Aran-Duchenne type of muscular atrophy, together with a com-

bined tabetic sclerosis. The combined sclerosis manifested itself clinically by lightning pains in the legs, loss of the left knee jerk and right Achilles jerk, and positive Argyll Robertson's sign. Lumbar puncture was refused.

An examination of the cord showed that the muscular atrophy was secondary to an anterior poliomyelitis due to syphilitic endarteritis. There was marked meningo-myelitis, with atrophy of the nerve roots and of the anterior cornua of the cord, with diminution in the number of nerve cells there, and lymphocytic infiltration.

A. NINIAN BRUCE.

#### **EARLY MENINGEAL PHENOMENA IN TYPHOID FEVER.**

(293) (*Accidents méningés précoces dans la fièvre typhoïde.*) A. ORTICONI and P. AMEUILLE, *Bull. et mém. Soc. méd. Hôp. de Paris*, 1915, **xxxix.**, p. 187.

A RECORD of two fatal cases in soldiers. The first case, which the blood culture and autopsy proved to be typhoid fever, was clinically one of cerebro-spinal meningitis. The cerebro-spinal fluid, however, was not under hypertension, was clear, and contained typhoid bacilli. Death took place on about the fifth day of the disease.

In the second case, in which the symptoms were also those of cerebro-spinal meningitis, the cerebro-spinal fluid showed hypertension, was turbid, and contained a Gram-negative intracellular diplococcus resembling the meningococcus in association with the typhoid bacillus.

Death took place on the second day of the disease. No autopsy.

J. D. ROLLESTON.

#### **A CASE OF TYPHOID CEREBRO-SPINAL MENINGITIS. (Un**

(294) *cas de méningite cérébro-spinale éberthienne.*) D'ORLSNITZ, BOURCART, and RONCHÈSE, *Bull. et mém. Soc. méd. Hôp. de Paris*, 1915, **xxxix.**, p. 276.

A SOLDIER, aged 23, was admitted to hospital for a wound in the supraorbital region, on 23rd December. Headache was severe, and the fever high and continuous. Widal's reaction, performed on 1st January, was negative. After slight improvement signs of meningitis developed. The cerebro-spinal fluid was turbid, and showed actively motile organisms, which proved to be typhoid bacilli. Death, preceded by an ictus and multiple hæmorrhages, took place on 14th January. No mention is made of a necropsy.

J. D. ROLLESTON.



**AN ATTENUATED FORM OF MENINGOCOCCAL SEPTICÆMIA**

(295) **WITH A MORBILLIFORM ERUPTION.** (*Méningococcémie à forme atténuée et érythème rubéoliforme.*) P. SAINTON and J. MAILLE, *Bull. et mém. Soc. méd. Hôp. de Paris*, 1915, xxxix., p. 296.

SEVERAL cases of meningococcal septicæmia without any meningeal signs have been published, *e.g.*, by Bovaird (*v. Review*, 1909, vii., p. 419), Netter (*ibid.*, p. 741), Monziols and Loiseleur (*ibid.*, 1910, viii., p. 304), Chevrel and Bourdinière (*ibid.*, p. 703), and others, but mild cases such as the following are rare and difficult to detail.

A Belgian soldier, aged 18, was admitted to hospital for an eruption resembling measles. Temperature 104°. No meningeal symptoms. Two days after admission he complained of pain in the right wrist, and the next day the left knee became swollen. Puncture of these joints gave issue to a turbid fluid containing meningococci. Cultivation of the rhino-pharynx was negative, and the cerebro-spinal fluid was normal, but a blood culture showed meningococci. Recovery took place without any meningeal symptoms, or any further meningococcal lesions.

J. D. ROLLESTON.

**THE EARLY DIAGNOSIS OF SPINAL CORD TUMOURS.**

JOSEPH (296) COLLINS and HENRY E. MARKS, *Amer. Journ. Med. Sci.*, 1915, cxlix., Jan., p. 103.

Two cases of extra-medullary tumour of the spinal cord are reported.

In connection with such tumours, great stress was at one time laid upon the sensory irritative phenomena of the so-called initial or radicular stage, and above all, the cardinal significance of pain as an early symptom was strongly emphasised. Within recent years, however, it has been shown that the preliminary or root stage might be totally insignificant or wanting. The two cases reported belong to this latter group. In the first case pain was absent; in the second case it was slight and atypical.

The essential element in the diagnosis is the determination of a gradually progressive motor and sensory spinal paralysis, the upper pole of which, despite increase in cross section intensity, varies slightly, if at all.

D. K. HENDERSON.

**PAIN AND OTHER SENSORY DISTURBANCES IN DISEASES OF**

(297) **THE SPINAL CORD, AND THEIR SURGICAL TREATMENT.**

CHARLES A. ELSBERG, *Amer. Journ. Med. Sci.*, 1915, cxlix., March, p. 337.

THE author has had an extensive experience with spinal cord tumours, and he believes that in every case of indefinite abdominal

pain and tenderness, it is advisable to make certain that we are not dealing with a cutaneous hyper-sensitiveness which so often simulates real abdominal tenderness. In every case a careful neurological examination should be made. Several cases are quoted.

D. K. HENDERSON.

**FRACTURE OF THE BASE OF THE SKULL, WITH ESCAPE OF (298) CEREBRO-SPINAL FLUID FROM THE EAR. THE EFFECT OF ATROPINE AND EPINEPHRIN UPON THE SECRETION.**

J. WALKER MOORE, *Amer. Journ. Med. Sci.*, 1915, cxlix., April, p. 580.

THE case is reported of a fracture involving the squamous and anterior surface of the petrous portion of the left temporal bone. The part of the fracture involving the petrous portion extended into the internal auditory meatus.

The evolution of the hypothesis, that the cerebro-spinal fluid is a true secretion, is briefly outlined, and both the chemical and clinical effects of the hypodermic injection of atropine and epinephrin on the fluid are reported.

D. K. HENDERSON.

**THE OPERATION OF CRANIAL DECOMPRESSION. WILLIAM (299) SHARPE, *Amer. Journ. Med. Sci.*, 1915, cxlix., April, p. 563.**

THE author's conclusions are:—

1. The operation of cranial decompression is one that should be used much more frequently than it is at present; especially is this true in brain tumour, fracture of the skull, brain abscess, and selected cases of spastic paralysis due to an intra-cranial hæmorrhage at birth.

2. The subtemporal method is the ideal route; besides being less difficult technically, it exposes an area of the brain most frequently involved. This permanent decompression opening does not weaken the skull, in that the thick overlying temporal muscle protects it most adequately, so that herniæ cerebri are not to be feared.

3. The operative mortality is low.

D. K. HENDERSON.

**CONTINUOUS CLONIC SPASM OF THE LEFT ARM (EPILEPSIA (300) CONTINUA) CAUSED BY A TUMOUR OF THE BRAIN.**

CHARLES W. BURR, *Amer. Journ. Med. Sci.*, 1915, cxlix., Feb., p. 169.

THE patient was a woman, 56 years, who had had her right breast amputated on account of carcinoma. Several months later,

muscular twitching in the left arm started, which recurred from ten to twenty times daily, and continued from a few minutes to half an hour. She also complained of weakness in the left arm unaccompanied by pain. A week after the onset of the twitching she had an attack of Jacksonian epilepsy, which began on attempting to pick up something from the floor with the left hand. Following this she had five similar attacks, Jacksonian in type, and gradually the twitching of the arm became more and more frequent, until it was practically never still during waking hours. The patient did not complain of any of the characteristic general symptoms of brain tumour. In about twelve weeks after the first appearance of the twitching in the arm the patient died.

The autopsy showed, on the right ascending frontal convolution, a tumour about the size of a pea growing from the pia arachnoid, and passing into but not destroying the cortex. A similar mass about the same size was found on the inferior surface of the left lobe of the cerebellum. Microscopic examination showed the two tumours to be carcinomatous.

D. K. HENDERSON.

**A CASE OF TUMOUR OF THE GASSERIAN GANGLION. (Ein (301) Fall von Ganglion Gasseri-Tumor.)** MAGNUS HELLSTEN, *Deut. Ztschr. f. Nervenheilk.*, 1914, lii., p. 290.

A MAN, aged 28, previously healthy, began to suffer from vertigo and difficulty in performing the finer movements with the hands and arms. Three years later weakness in the left leg developed, increasing to spastic paralysis. This was followed by weakness and intention tremor in the left arm, frontal headache, slight deafness in the left ear, difficulty in speaking, ataxia in the arms and legs, and nystagmus in the right eye. The left angle of the mouth and nasolabial fold were smoother than the right, and the left half of the tongue was rather atrophied. The first and third cranial nerves were unaffected, the second showed diminution of the field of vision, double optic neuritis, and hæmorrhages in the right side. The corneal reflex on the left side was completely absent, somewhat diminished on the right side. The mouth was drawn to the right, and the left eyelid showed less strength than the right. The tongue deviated to the left. Sensibility was unaffected. The patellar and Achilles jerks were exaggerated, Babinski's sign was negative, and right ankle-clonus was present. Death followed broncho-pneumonia.

At the autopsy an intradural tumour was found 7 cm. broad, 7 cm. long, and 4 cm. thick, lying in the middle and posterior cranial fossæ on the left side, involving about a third of the foramen magnum and compressing the left temporal lobe, the

pons Varohi, and the left hemisphere of the cerebellum. Microscopically it was found to be composed of glia cells and nerve cells. It was intimately related to the Gasserian ganglion, from the connective tissue portion of which it appeared to have arisen. The anterior part from which the three trigeminus branches arise was best preserved, while the posterior part showed necrotic changes.

A short analysis of the 23 previously reported cases is given. In 20 of these where the side was stated the tumour was on the left side in 14. In 18 of these cases it was primary in 9 and secondary in 9.

A. NINIAN BRUCE.

**RETINITIS PIGMENTOSA WITH OPTIC ATROPHY AND**  
(302) **FAMILIAL CEREBELLAR ATAXIA.** (*Rétinite pigmentaire avec atrophie papillaire et ataxie cérébelleuse familiales.*)  
HENRI FRENKEL and MAURICE DIDE, *Rev. Neurol.*, 1913, xxi.,  
Juin 15, p. 729.

A DESCRIPTION of the case of a family in which three sisters were successively affected with pigmentary retinitis with optic atrophy, mental deterioration (acquired infantilism), asynergia (cerebellar ataxia), and convulsions. There was no previous evidence of the disease in the family, no consanguinity, and no syphilis.

Such cases are difficult to classify. They differ from amaurotic family idiocy, cerebral diplegia, and hereditary cerebellar ataxia. The authors regard the condition as an acquired dystrophy involving a large number of large cells. Such a process, of which we have here a generalised example, may involve indiscriminately different parts of the cerebral and cerebellar cortex, cord, and retina.

A. NINIAN BRUCE.

**SEVERE JAUNDICE IN THE NEW-BORN CHILD: A CAUSE OF**  
(303) **SPASTIC CEREBRAL DIPLEGIA.** WILLIAM G. SPILLER, *Amer.*  
*Journ. Med. Sci.*, 1915, cxlix., March, p. 345.

THE author has observed four cases in which severe jaundice was believed by the parents to have had an etiological relation to cerebral diplegia.

CASE I.—A child, 7 years, had had a severe attack of jaundice when one week old, which lasted for three days. For one year she was unable to hold up her head. Until 3 years old she was unable to rise to a sitting posture when lying on the floor. All movements of the upper and lower limbs were awkward. She was unable to talk.

When last seen she could say some simple single words; occasionally could put two words together, but did not form any sentence, and speech was very indistinct. Choreiform movements were seen in the whole body, in the muscles about the mouth, and at times of the upper lids and head. The limbs were poorly developed, rigid, her feet turned inward, and she fell easily.

CASE II.—A child, 16 months old, had, four days after birth, developed severe jaundice which lasted about six weeks. For six or seven months the left upper and lower limbs were paretic. There was inco-ordination in attempting to grasp objects, inability to sit up or hold up the head. The upper limbs were not spastic. The lower limbs were somewhat rigid.

CASE III.—A child, 2 years and 4 months old, a few days after birth, developed severe jaundice, and was not expected to live. On examination she was able to walk without support, but showed hypotonia of the neck muscles, and the eyes had a tendency to roll upward slightly. The limbs were very little if at all spastic.

CASE IV.—A child, 3 years and 10 months old, on the third day after birth developed severe jaundice which lasted for three months. When 5 months old she had general convulsions. She had never held her head up, she could not speak, and she was unable to sit without support. She had had difficulty in swallowing. The limbs were rigid and emaciated. She had bilateral talipes equinovarus.

D. K. HENDERSON.

**FROST-BITE OF THE FEET.** (*Gelure des pieds.*) J. A. SICARD, (304) *Bull. et mém. Soc. méd. Hôp. de Paris*, 1915, xxxix., p. 61.

As the result of an examination of more than 300 cases, Sicard comes to the following conclusions:—

1. The left foot is most affected, as the circulation is more active in the right foot, which therefore offers better resistance.

2. Predisposing causes include tight gaiters, plantar hyperidrosis, chilblains of the toes and varicose veins.

3. Examination of sensibility in frost-bite of moderate intensity. The different stages of frost-bite of the foot are shown chronologically by (a) disturbance of subjective sensibility (formication, &c.), (b) vasomotor disturbances and oedema of an ascending character, (c) blisters, (d) sloughing and gangrene, (e) repair.

In cases of moderate severity without extensive gangrene, but with or without localised sloughing, and towards the second or third week, when the inflammation is subsiding, a sensory syndrome of syringomyelic type is almost constant, and is

localised to the base of the toes, or the anterior third of the dorsum of the foot. Persistent plantar hyperæsthesia without objective signs is also frequent.

4. The tendo Achillis reflex is often lost for several weeks. Its absence will remove any suspicion of simulation.

5. Mechanical and electrical examination of nerves and muscles of the affected limb merely shows the reaction characteristic of neuritis in general.

6. The temperature locally is raised during the congestive stage and falls during the mummification of the tissues.

7. As a rule there is a fall of blood pressure in the affected limb.

8. Pathological anatomy. In two cases, where amputation of the foot was necessary, thrombosis of the veins and arteries was found. The external and internal plantar nerves showed typical Wallerian degeneration in their peripheral parts.

9. In three cases tetanus developed on the sixth, seventh, and ninth days respectively of the frost-bite, where there had been no other wound.

J. D. ROLLESTON.

**ON THE DISEASE OF THE TRENCHES.** (A propos du mal des (305) tranchées.) L. BERNARD, *Bull. et mém. Soc. méd. Hôp. de Paris*, 1915, xxxix, p. 169.

BERNARD uses this non-committal term in preference to "frost-bite" for a condition which first appeared among the soldiers at the front in October, before the period of severe cold, and simultaneously with the commencement of trench warfare. The affection appears and runs its course like a trophic disturbance of neuritic or neuro-vascular origin. It resembles Raynaud's disease in its symmetrical, or at least bilateral distribution. At the onset the symptoms are paræsthesia, and pain without any cutaneous change. It is only later that a diffuse violet coloration appears on the feet and progressively invades the lower limbs. Sometimes, in place of a diffuse redness, the more localised phenomenon of acroasphyxia is noted. Subsequently disturbance of objective sensibility may be found, *e.g.*, zones of anæsthesia in the region of the external and internal popliteal nerves, usually accompanied by œdema. Finally more or less extensive necrosis and gangrene develop. The prolonged action of cold and damp is the principal factor in the ætiology. Tight boots or gaiters play only an accessory part. There is no question of infection or intoxication. Bernard recommends the English practice of applying compresses of warm saline solution.

J. D. ROLLESTON.

**SIGNS OF NEURITIS IN FROST-BITE OF THE FEET.** (Des signes (306) de névrite des les gelures de pieds.) J. HEITZ and S. DE JONG, *Bull. et mém. Soc. méd. Hôp. de Paris*, 1915, xxxix., p. 172.

SIGNS of peripheral neuritis are very frequent in the frost-bitten areas, but they are sometimes only manifested by disturbances of cutaneous sensibility. In some patients only a few toes are affected, but as a rule the sensory disturbances extend up to the middle of the metatarsus. Tactile sensibility is generally less affected than sensibility to pricks and heat. Out of 38 cases the plantar reflex was absent in 26, and present in 12. In all the cases in which the reflex was lost there were sensory troubles. There was no relation between the presence of ulceration and the absence of the reflex, for the absence of the reflex was noticed equally frequently in the cases with and without ulceration. Out of 38 cases the tendo Achillis reflex was absent in 7, and diminished in 6 (*i.e.*, affected in 13, or 35 per cent.). There was no relation between the date of appearance of the frost-bite and the presence or absence of the tendo Achillis reflex, nor between the presence or absence of ulceration and the state of the reflex.

In 9 patients, both the tendo Achillis and the plantar reflexes were absent, in 18 the plantar reflex was absent and the tendo Achillis reflex present, in 4 the tendo Achillis was alone affected, and in 7 both reflexes were normal. J. D. ROLLESTON.

**FAMILY CEREBRAL DEGENERATION WITH MACULAR**  
(307) **CHANGE (SO-CALLED JUVENILE FORM OF FAMILY**  
**AMAUROTIC IDIOCY).** FREDERICK E. BATTEN, *Quart. Journ. Med.*, 1913-14, vii., p. 444.

AN account is given of a family of five children, three of whom were affected with a progressive disease leading to dementia, blindness, and paralysis, one of whom showed changes in the macular region of the eyes. The children were healthy at birth and developed in a normal manner till the age of 3½ years. Epileptic fits then occurred and they began to degenerate. They became noisy, dirty in habits, and developed a spastic condition of the limbs. Death ensued in the one child at the age of 8, in the other at 4, and in the third child at 6 years. In two a post mortem has been performed. In one case no change was visible in the nervous system macroscopically, in the other only slight atrophy, but on microscopic examination diffuse degenerative changes affecting the ganglion cells were visible in the cerebrum, cerebellum, and spinal cord. The Wassermann reaction of the blood and cerebro-spinal fluid was negative in both cases, and no change in the brain or membrane was found suggesting congenital syphilis.

It is clear from these and other cases that there is a form of familial cerebral degeneration which occurs at a later age, has no race proclivity and somewhat different clinical manifestations from that described by Tay and Sachs under the title of "family amaurotic idiocy." The typical features of these cases are loss of intellectual faculties, loss of vision, and loss of motor power. In some cases all three defects start together or run an equal and concomitant course, or the mental or the visual symptoms may appear first, and the degeneration may begin in early life, or in later infancy or in early youth. Some progress rapidly to a fatal end, others are slow. Some show distinct changes in the macula, others pigmentary changes in the retina, others show no fundus change or only in the later stages. Clinically there is a great variation in the symptoms, and this, together with their time of appearance, forms a basis for classification. Pathologically they are essentially the same.

A. NINIAN BRUCE.

**FAMILY PERIODIC PARALYSIS.** (Report of a typical case, with (308) **metabolism study.**) THEODORE DILLER and JACOB ROSENBLOOM, *Archives Int. Med.*, 1914, xiv., Dec., p. 869.

THIS condition was first reported by Westphal in 1885. About sixty cases have since been described. Gardner (*v. Review*, 1913, xi., p. 334) believed that the disease was due to a congenital defect of metabolism.

The present case was a man, aged 21, single, non-smoker, and abstainer. No history of syphilis. His great-grandmother and grandfather on his mother's side suffered from periodic paralysis, the latter dying from it. A second cousin on his mother's side also suffers from it, but not severely. The patient has had attacks for seven years at irregular intervals, and lasting half an hour to three or four days. Two or three occur every week, always at night. Only three or four of the more prolonged attacks occur in the year. The muscles of the face, tongue, eyes, and throat have never been affected. He has never had pain or sensory symptoms, nor been feverish, delirious, or mentally upset.

The only decided metabolic changes found was a marked decrease in the amount of creatinin and creatinin nitrogen excreted in the urine, and a marked increase in the amount of undetermined nitrogen of the urine. The metabolism study was made on the Folin diet, and was of seven days' duration, and consisted in the estimation of nitrogen metabolism and urinary nitrogen, and partition sulphur metabolism and urinary sulphur partition, calcium, magnesium, phosphorus, and fat metabolism.

A. NINIAN BRUCE.



**CLINICAL AND METABOLISM STUDIES IN A CASE OF**  
(309) **MYOTONIA CONGENITA—THOMSEN'S DISEASE.** JACOB  
ROSENBLUM and BENSON A. COHSE, *Archives Int. Med.*, 1914, xiv.,  
Aug., p. 263.

In a metabolism experiment of thirteen days' duration on a case of myotonia congenita, it was found that the patient lost 20.02 gm. of nitrogen, while the urinary nitrogen partition (urea, ammonia, creatinin, uric acid, and undetermined nitrogen) was normal in character. Creatin was absent from the urine except after the administration of 620 gm. of egg-yolk. In a period of ten days 0.9 gm. of sulphur was lost, while the urinary sulphur partition (total sulphates, ethereal sulphates, inorganic sulphates, and neutral sulphur) is normal in character. In the same time a positive phosphorus balance of 1.5 gm. was found, showing that during a time of nitrogen loss, phosphorus was retained. The amount of earthy phosphates and total phosphates in the urine may be considered normal. In ten days 4.09 gm. of calcium oxide and 0.56 gm. of magnesium oxide were lost by the patient. A retention of phosphorus produced by feeding egg-yolk did not cause a retention of calcium.

Evidence is produced to show that the loss of calcium may play a part in the production of the symptoms of myotonia congenita. The fat metabolism was normal in character, with an absorption of about 90 to 91 per cent. of the ingested fat.

A. NINIAN BRUCE.

**THE POTASSIUM CONTENT OF CEREBRO-SPINAL FLUID IN**  
(310) **VARIOUS DISEASES.** JACOB ROSENBLUM and VERNON L.  
ANDREWS, *Archives Int. Med.*, 1914, xiv., Oct., p. 536.

The potassium content of uncentrifuged cerebro-spinal fluid is higher than that of the centrifuged fluid. No relation was found between the number of cells in the fluid and its potassium content. No relation was found between the potassium content and the globulin reaction. It is not possible, on the basis of the potassium content, to draw any conclusions as regards the character of the condition present in the cerebro-spinal system. The potassium content of the cerebro-spinal fluid in thirty-one cases is presented. One of these cases with a very high potassium content (18.3 mg.) was extremely acute, and this one case seems to bear out Salkowski's assertion that the potassium content is high in the acute cases. The potassium content of the cerebro-spinal fluid is not increased in degenerative diseases of the cerebro-spinal system.

A. NINIAN BRUCE.

**CONTRIBUTION TO THE STUDY OF CERÉBRO-SPINAL**

(311) **SYPHILIS.** (Contribution à l'étude de la syphilis céphalo-rachidienne.) Mme. NATHALIE ZYLBERLAST, *Rev. Neurol.*, 1913, xxi., Juillet 30, p. 63 (2 figs.).

A WOMAN, aged 45, complained of pain in the left side of the head, in the left leg and left shoulder. There was also left ptosis which disappeared with antisyphilitic treatment. The left pupil was larger than the right, and did not react to light, the right reacted feebly. The left upper limb was very painful, and the left trigeminal nerve was painful on pressure. The right leg could scarcely be moved on account of the pain which any movement caused in the hip-joint, the left hip was much less painful. A diagnosis of cerebral syphilis was made from these and other symptoms, the only evidence of involvement of the cord being girdle sensation, sensory troubles in the left knee and weakness of the right knee jerk. There was no Babinski's sign, no trophic changes, and no signs of compression. Death was preceded by clonic contractions of the right upper limb.

At the autopsy the cerebral vessels were found sclerosed. A small hard tumour was found in the left temporal lobe, and another in the left parietal region. It showed the typical structure of a gumma, but without giant cells. The spinal meninges were thickened, and numerous small hard tumours were found scattered on the inner side. At the sixth dorsal segment a large gumma was found in the antero-lateral region of the cord, larger than the cord in diameter, while a second gumma was found in the cord itself, destroying the anterior horn and neighbouring regions.

The interest of the case consisted in the fact that such a large gumma had caused such few symptoms, and affords evidence of the great tolerance of the nervous system to compression.

A. NINIAN BRUCE.

**A REPORT OF THE TREATMENT OF CEREBRO-SPINAL**

(312) **SYPHILIS BY INTRASPINOUS INJECTIONS OF SALVAR-SANISED SERUM.** A. G. RYTINA and C. H. JUDD, *Amer. Journ. Med. Sci.*, 1915, cxlix., Feb., p. 247.

THEIR conclusions are as follows :—

1. Intraspinoous injection of salvarsanised serum, with proper precautions, is a safe treatment.
2. The results obtained indicate its superiority over the older known methods.

3. Treatment must be persisted in until the laboratory findings are negative, irrespective of the clinical progress observed.

4. Such clinical and laboratory improvements as have been observed by us have still to go further. D. K. HENDERSON.

**RECENT SYPHILIS, SALVARSAN TREATMENT, ABDUCENS (313) PARALYSIS, WITHOUT CHANGES IN THE CEREBRO-SPINAL FLUID.** (Frisk syfilis, salvarsanbehandling, abducens paralyse uden forandringer i spinalvaesken.) C. RASCH, *Hospitalstidende*, 1915, lviii., p. 347.

A MAN, aged 24, received an intravenous injection of 40 cgm. salvarsan on 14th September for a chancre on the penis which he had contracted six weeks previously. On 16th September he complained of pain in the neck and diplopia. On the 17th definite right abducens paralysis was found. The absence of any changes in the cerebro-spinal fluid may be explained either through the meningeal lesion being very slight, or by the strabismus being a salvarsan symptom, in which case the nucleus of the sixth nerve was affected. J. D. ROLLESTON.

**THE RESULTS AND INTERPRETATION OF THE WASSERMANN (314) TEST.** CHARLES F. CRAIG, *Amer. Journ. Med. Sci.*, 1915, cxlix., Jan., p. 41.

THE statistical portion of this paper is based on over 18,000 tests personally performed.

The paper is a somewhat general one, and confirms the experience of other reliable workers. D. K. HENDERSON.

**HYPERTONIC SALT AND ALKALI SOLUTION IN SALVARSAN (315) ANURIA.** R. T. WOODYATT, *Journ. Amer. Med. Assoc.*, 1915, lxiv., May 29, p. 1811.

A MAN, aged 45, suffering from aneurysm of the thoracic aorta, was given three doses of 0.3, 0.3 and 0.4 gm. of old salvarsan. Forty-eight hours after the last he felt ill, and presented the following symptoms:—Temperature 99° F., albuminuria, anuria, nausea, vomiting, headache, delirium, and an erythematous rash. Salvarsan poisoning was diagnosed. As the patient was constipated when treatment began, he was given an alkaline hypertonic solution (Fischer's solution) by the bowel, and recovery took place within a few hours of the administration. A. NINIAN BRUCE.

**ON ABNORMALITIES OF THE ENDOCRINE FUNCTIONS OF**  
 (316) **THE GONADS IN THE MALE.** L. F. BARKER, *Amer. Journ. Med. Sci.*, 1915, cxlix, Jan., p. 1.

THE male sex-glands or gonads are divisible into two parts—(1) a generative part proper producing the sperm cells, and (2) an internal secretory part (the interstitial cells of Leydig), producing the hormones upon which depend (*a*) the development of the genital tract in the embryo, (*b*) the development of the "secondary sexual properties," and perhaps (*c*) in part, the neural states associated with the libido sexualis and potentia coeundi.

The most convincing arguments in favour of this view are enumerated and discussed, and two cases are fully reported.

The first case is that of an eunuchoid showing signs of hypogenitalism and of dyshypophysism.

The second case is one of dwarfism, unilateral cryptorchism, azo-ospermia, hypergenitalism, tuberculous polyserositis, general miliary tuberculosis.

D. K. HENDERSON.

**CONTRIBUTION TO THE STUDY OF POLYGLANDULAR**  
 (317) **SYNDROMES. JUVENILE DIABETES, TUMOUR OF THE**  
**HYPOPHYSIS, AND INFANTILISM.** (Contribution à l'étude des syndromes polyglandulaires. Diabète juvenile, tumeur de l'hypophyse et infantilisme.) PAUL SAINTON and LOUIS ROL, *Rev. Neurol.*, 1913, xxi, Juin 30, p. 785.

A WOMAN, aged 20, began to suffer from violent headaches with persistent somnolence at the age of 16. This was followed by violent thirst, enormous appetite, and emaciation. About 3 litres of urine were passed in the twenty-four hours, and about 96 gm. of sugar were present per litre. Acetone and diacetic acid were also present. The amount of sugar varied, but never fell below 35 gm. per litre.

She then developed a myxœdematous appearance, with marked signs of infantilism. The thyroid was atrophied, hard, and sclerosed, and nervous symptoms became prominent, with amenorrhœa, depression, weakness, slowness of speech and of movement, headache, somnolence, and narcolepsy. Bitemporal hemianopia was present, and an X-ray showed great enlargement of the sella turcica. Death occurred a month later from coma, with symptoms of cerebral compression.

The disease here had shown itself in two phases, the first diabetic, the second cerebral or rather pituitary. There was no autopsy. The primary lesion was a tumour of the pituitary, with predominance of diabetic symptoms, but the existence of a hypophyso-thyro-ovarian pluriglandular syndrome seemed obvious from the clinical symptoms.

A. NINIAN BRUCE.

**EXOPHTHALMIC GOITRE.** An abstract of the results obtained (318) from the investigation of 93 cases. HELEN M. GURNEY, *Brit. Med. Journ.*, 1915, May 29, p. 924.

THESE 93 cases were all in-patients of the Royal Victoria Infirmary, Newcastle-on-Tyne, between 1903 and 1914; 92 per cent. of the cases were females. In 4 patients the symptoms developed before the age of 10, in 28 between 10 and 20, in 35 between 20 and 30, in 14 between 30 and 40, and in 13 between the ages of 40 and 50 years; 39 per cent. gave histories of troubles in the throat, suggesting infection through the tonsils. The exciting cause was emotional in 20 per cent. and due to disturbance of the generative organs in 9 per cent. Goitre appeared first in 62 per cent., and exophthalmos in 21 per cent. Contrary to expectation, the prognosis was not markedly influenced by the presence of hallucinations (7 cases), organic or functional disturbances of the cardio-vascular system (in 43 per cent.), severe diarrhoea (which occurred in 36 per cent., of which 20 per cent. died), or considerable disturbance of the integumentary system. Amenorrhoea occurred in 15 per cent.

The prognosis is markedly influenced by (1) the age of the patient at the onset—the death-rate is 25 per cent. in cases beginning between 10 and 15 years of age, and gradually increases to 44·5 per cent. in cases beginning after 45; (2) the duration of the illness before treatment. In cases under one year's previous treatment before admission to hospital the death-rate was 35 per cent.; between 1 and 2 years, 75 per cent. The rate falls after the fourth year, as after that length of time the disease may be regarded as chronic. The development of acute symptoms, such as diarrhoea or tachycardia, is always grave.

The treatment consisted in rest in bed. Temporary improvement followed the electric battery and X-rays. Many patients entirely cured of all disturbing symptoms, and otherwise well, still retained some permanent enlargement of the thyroid.

A. NINIAN BRUCE.

**THIRTY CASES OF INCOMPLETE BASEDOWISM OR VASO-MOTOR NEUROSIS.** (Trente cas de Basedowisme fruste ou névrose vaso-motrice.) *Rev. Neurol.*, 1913, xxi., Juin 30, p. 795.

THE authors record the symptoms and physical signs of 30 cases, which are grouped as follows:—(1) Basedow's disease (with enlargement of the thyroid), 8 cases; (2) Basedowism or vasomotor neurosis (without goitre and without exophthalmos), 15 cases; (3) cases following castration in women, 8 cases.

These cases are analysed, and it is pointed out that they are all characterised by vasomotor disturbances associated with cardiovascular instability, especially in the nature of excitability in the action of the heart.

A. NINIAN BRUCE.

**ON THE VALUE OF ARTERIAL HYPOTENSION AS AN OBJECTIVE SIGN OF PSYCHASTHENIA.** (De la valeur de l'hypotension artérielle comme signe objectif de la psychasthénie.)  
O. CROUZON, *Bull. et mém. Soc. méd. Hôp. de Paris*, 1915, xxxix., p. 234.

ARTERIAL hypotension in cases in which tuberculosis and Addison's disease can be excluded is a valuable objective sign of psychasthenia, and therefore serves as a confirmation of the patient's sincerity. It is specially marked in the old-standing cases once described as "constitutional neurasthenia." Some improvement may be obtained by exhibition of adrenalin or suprarenal extract, but the symptoms return as soon as the drugs are discontinued.

Eight illustrative cases are recorded. J. D. ROLLESTON.

**TWO CASES OF LARYNGEAL OBSTRUCTION, AND ONE OTHER.**  
(321) CHARLES GRAEF, *Med. Record*, 1915, lxxvii., April 10, p. 604.

CASE I.—Man, aged 36. History of hoarseness and difficulty in breathing for several months, much worse for last three days. Great dyspnœa when seen. With laryngeal mirror a large tumour seen almost closing upper aperture of larynx. To get a better view a curved probe was introduced to pull forward the epiglottis. This was immediately followed by a marked increase in the dyspnœa, which continued even after the instruments were withdrawn. The patient finally rolled over unconscious. After some difficulty a scalpel was found, and a laryngotomy was performed. After carrying out artificial respiration for some time, the patient eventually came round. The tumour was diagnosed as a gumma.

Case II. was one illustrating an unusual cause of respiratory difficulty during anæsthesia. During a mastoid operation it was noticed that the patient's nose was bleeding a little. No attention was paid to it at the time, but towards the completion of the operation the patient stopped breathing, and artificial respiration was at once begun. The throat was also swabbed out, and a piece of membrane-like material was found in the mouth, and pulled out. On examination this turned out to be a firm blood clot over six inches long, and half an inch thick, which had been lodged in the larynx.

The third case was of no particular interest.

J. K. MILNE DICKIE.

## PSYCHIATRY.

### THE FOREARM SIGN (SIGN OF LÉRI) IN MENTAL DISEASES.

(322) (Du signe de l'avant-bras (signe de Léry) dans les maladies mentales.) LIVET, MOREL, and PUILLET, *Rev. Neurol.*, 1913, xxi., Juin 30, p. 791.

THIS sign has already been described (*v. Review*, 1913, xi., p. 432; 1914, xii., p. 451). The authors examined it in 268 cases of mental disease. Of these, 92 were cases of dementia præcox, and it was negative in 82, *i.e.*, 89 per cent. It was also negative in 26 out of 28 cases of idiocy and imbecility. On the other hand, it was positive in 32 out of 39 cases of general paralysis, and positive in 22 out of 23 cases of manic-depressive psychoses. It would thus appear that this sign is of value in the diagnosis of these conditions.

A. NINIAN BRUCE.

### HEMATOMA AND SEROUS EFFUSION INTO THE AURICLE OF

(323) THE EAR. (Othématome et épanchement séreux du pavillon de l'oreille.) BOUCHAUD, *Rev. Neurol.*, 1913, xxi., Juin 15, p. 737.

A MAN, aged 35 years, suffering from general paralysis, developed a soft, fluctuating tumour in the right ear, arising from the helix, and not involving the antihelix nor the concha. It was transparent, and on puncture gave issue to a clear serous fluid. Evacuation of the contents was followed by cure without deformity.

These types of ear tumours of this kind may be distinguished according as the contents are (1) sanguinous, (2) sero-sanguinous, or (3) serous. It is suggested that the term *hydroma* might be applied to the last. The hematoma is common, and tends to result in deformity. The hydroma does not cause disfiguration unless it be allowed to become inflamed, and the contents become sanguinous. It appears to be the result of the trophic changes which accompany general paralysis, and accounts of six other similar cases are given which occurred in dementia præcox, general paralysis, and delusional insanity.

A. NINIAN BRUCE.

## Reviews

**THE HISTOLOGY OF THE PINEAL BODY.** (*Histologiske Under-søgelser over Corpus Pineale.*) K. H. KRABBE. 10½ in. by 7½ in. Pp. 112, with 47 figures in 17 plates. Copenhagen: J. Gjellerup, 1915.

AN important contribution to the study of the histology of the pineal body has been made by Krabbe, based on material collected during five years' work at the Bicêtre in Paris and in Copenhagen at the General Hospital. He finds Claudius's method of embedding in paraffinoid (instead of paraffin) most successful, permitting the preparation of sections 5  $\mu$  thick; he mentions a large number of staining methods employed in the study of special parts or processes of the pineal body. Twelve pages are given to its development; Krabbe's earliest sections are from foetuses in the middle of the third month, and he gives excellent drawings of the histological appearances presented by their pineal bodies. At birth the pineal diverticulum will be partly or completely closed; there will be a variable amount of connective tissue around the blood vessels; and the characteristic pineal cells will show variable degrees of differentiation in their staining reactions, or metamorphosis as Krabbe calls it, as a rule. This metamorphosis is usually complete by the end of the first year of life. It consists in the conversion of proparenchyma cells into parenchyma cells. At birth, sections of the pineal body usually appear to consist of a coarse dark network of the former, enclosing the latter in their meshes; Krabbe distinguishes three types of proparenchyma cells by their shapes and staining reactions, and these develop into three varieties of parenchyma cells. Parenchyma cells have larger and less deeply staining nuclei (relatively poorer in chromatin), and more protoplasm than proparenchyma cells; the two varieties merge one into the other. Discussing the much-vexed question of the structure of the pineal parenchyma, Krabbe praises the work done by the Turkish lady, Z. Dimitrova (1901), Achúcarro and Sacristán (1912), and Walter (1913); the last three writers were the first to mention the numerous nerve cells found in the human pineal body, though Cionini (1885) had described glia fibres in it many years previously. Krabbe lays great stress on the importance of using various fixing and staining methods in studying the pineal parenchyma, and on the necessity of comparing the results furnished by these different methods; in addition, the pineal body must be studied at different ages—for want of such studies Dimitrova missed the fact that at the



age of 8 or 9 years the pineal cells begin to excrete pyroninophil granules from their nuclei. Krabbe gives careful descriptions of three main types of cell met with, with excellent drawings of their microscopical appearances: (1) pineal cells, (2) glia cells, (3) nerve cells. Each type appears in several forms; but the types remain distinct, and do not pass one into the other. The pineal cells form the bulk of the parenchyma; they are more or less rounded, their nuclei are poor in chromatin, and very irregular in shape; these cells are bedded in a protoplasmic fibrillary network of glia fibres and nerve fibres. The glia fibres are all derived from glia cells, which are not present in relatively large numbers, so that the pineal body cannot fairly be described as a glial organ. The nerve cells exhibit angular nuclei rich in chromatin; their protoplasm is scanty and free from Nissl bodies; from the first year of life onwards they exhibit increasing numbers of out-running fibres with knobbed endings—which may be interpreted as either Cajal's growth-knobs or sensitive nerve endings; they give rise to numerous branched anastomosing nerve fibrils that stain like axis cylinders, and are to be regarded as nerve fibres. Krabbe could find no evidence that these nerve fibres are connected with the sympathetic threads running along the vessels; he confirms the old observations that bundles of nerve fibres enter the pineal body from the posterior commissure and the commissura habenularum, and the presence of medullated nerve fibres in the pineal body. He does not believe in the existence of Loewy's (1912) pineal secretory capillary system of canals demonstrable by injection experiments. Discussing the granules excreted from the nuclei into the protoplasm of the pineal cells, Krabbe gives reasons for disagreeing with Achúcarro and Sacristán, who state that the granules are wandering into the nuclei; he notes that amitotic nuclear division takes place in these cells up to extreme old age.

Connective tissue cells and fibrils about the blood vessels are found in the pineal body during the first year of life, and they habitually increase in amount year by year, varying widely in quantity in different persons, however. Fibrous septa appear at the age of 6 or 8, converting the previously homogeneous pineal body into a pseudo-alveolar organ usually; a patient of 92, however, exhibited a minimum of septa. Not all the blood vessels are surrounded with fibrous tissue; the septa and parenchyma are not always sharply delimited one from the other. The pineal body has a thin capsule of connective tissue apparently free from unstriped muscle fibres; in man the pineal body contains no striped muscle fibres, though it does in the ox and calf. The pineal connective tissue contains numerous mast cells, even during foetal life, some showing granules staining darkly with osmium;

pigment cells of various types; and "dust-bin cells" (Skarnbötter-celler, the Abräumzellen of Nissl and Alzheimer), often large round or oblong cells with basophil or acidophil granules that are neither pigment, fat, nor mast-cell granules. Krabbe believes the dust-bin cells to be pathological, not normal.

He finds that the embryonic recessus pinealis of the third ventricle is usually shut off about the seventh month of foetal life, and he describes the changes that may follow in its ependymal cells if, as often happens, parts of the pineal recess or diverticulum remain open as spaces in the parenchyma. These cells, he argues, may not be ependymal cells, as at first sight appears probable, but necrotic parenchyma cells. In later life the spaces or cysts found in connection with the glial tractus diverticularis are not lined with ependyma, as Marburg states, but with necrotic glia cells; Krabbe holds that these spaces are shut-off fragments of the pineal diverticulum as a rule, and not the results of necrosis of the central parts of the glial plaques or masses. They are normal constituents of the pineal body, though not always present, and hence are to be called "spaces" rather than "cysts." The basal part of the pineal body is often very rich in glial fibrils.

Pineal calcareous concretions may occur at any age, and are constant after about the seventeenth year. Generally they increase in number with age, but not always, and Krabbe regards them as pineal débris, not an essential constituent. Most occur in the parenchyma, a few in the connective tissue. They arise in the protoplasmic substance between the pineal cells, and are to be regarded as the product of these cells only. Their presence evokes but a slight reaction in the tissue immediately round them, crushing the adjacent cells. Krabbe thinks they may perhaps be formed in connection with the granules excreted by the nuclei of the pineal cells.

The last sixteen pages of Krabbe's thesis deal with biological considerations. He remarks that the pineal body has been considered to be a gland from the days of Galen, and that at the present time it has received much attention from theorists as being one of the endocrine glands: it has also been regarded as a lymph gland, as a nervous organ, and as a degenerated rudimentary organ without function in man. Krabbe says that there is no reason to suppose that it is a glial organ, or that the small amount of glia in it differs in function from the similar glia that forms so large an amount of the central nervous system. Its nerve cells are not sympathetic in origin; their growth-knobs, similar to those seen around the so-called Redlich-Fischer plaques, supposed to be signs of senile involution, may perhaps be analogous to nerve endings in muscles and tendons. The true pineal cells are unlike any other cells in the human body; during foetal life

and the first year they exactly resemble the neuroblasts found throughout the foetal brain. Later they undergo the metamorphosis described above, and in addition present the phenomenon of the extrusion of basophil nuclear granules without change in their shape. They have no processes, and so cannot be regarded as nerve cells or glia cells in the ordinary sense of those terms. Krabbe discusses the question of regarding the pineal body as a gland with an internal secretion; the best argument for this view he finds in the fact that the pineal cells show numerous amitotic divisions in process, and the excretion of nuclear granules may also be taken as evidence of a glandular character. Histological research can hardly settle the point. Ablation experiments have left the function of the pineal gland doubtful, and have not determined any certain connection between the gland and the genital apparatus. The effects of injection of pineal extracts Krabbe dismisses in eight lines as interesting but quite inconclusive (p. 76). Clinical observations indicating the gland's functions were first brought thoroughly together in 1908 by Marburg. Up to the present time about 70 cases of pineal tumour have been recorded, and in 5 of these premature development of the sexual organs has been noted; in a few others the patient has shown obesity. At first Marburg attributed the premature sexual development to hypopinealism, the obesity to hyperpinealism; more recently he and certain Italian observers have limited themselves to the conclusion that the pineal body is an organ with an internal secretion that regulates the development of the secondary sexual characteristics. Krabbe deprecates hasty speculation as to the function of the normal pineal body based on these few exceptional pathological cases; the most he is willing to deduce from them is that the effects of pineal tumours may exhibit analogies with those of tumours of other organs with internal secretions. From the point of view of comparative anatomy, Creutzfeldt (1912) has pointed out that the pineal body is best developed in ruminants and horses, but absent in dasypus, seals, halicore, elephants, the rhinoceros, the mole, &c., and he connects its presence with the possession of a relatively thin skin.

Krabbe finally develops his own view that the pineal body may have a sensory function, that of regulating and keeping constant the pressure of the cerebro-spinal fluid secreted by the ependyma of the choroid plexuses: this view, as he says, was indicated by Galen, substituting the word "spiritus" for "cerebro-spinal fluid." Flesch (1888) had supposed that it might regulate the production of heat; Walter (1913) described it as a sort of reflex organ, and in 1914 wrote of it as a regulator of the pressure of the cerebro-spinal fluid. Krabbe says that the human pineal body is phylogenetically not homologous with the parietal eye

of saurians, but is homologous with that of cyclostomes, following Studnička (1905): he thinks that there is not yet enough evidence to show whether the sense organ theory or the internal secretion theory of the pineal functions is the best. He does not think that the pineal body can properly be described as a rudimentary organ, and finds nothing to suggest that it is degenerating or functionless, or even in a state of involution; the calcareous pineal concretions taken by certain writers as evidence of involution or degeneration are compared by Krabbe to the similar concretions found in the membranes of the brain, and he connects both with the cerebro-spinal fluid, and particularly with variations in its pressure. Excess of connective tissue may be marked at the age of 12, and absent at 92, as he points out; hence it is impossible to argue that the increasing fibrosis of the pineal body usual with advancing years is evidence of involution. He prefers to say that the pineal body shows signs of a lack of balance rather than of involution; the concretions, glia-plaques, fibrosis, nerve end-knobs, and nuclear excretion are to be taken as evidence of unbalanced activity of the various elements composing the pineal body, possibly due to variations in the pressure of the cerebro-spinal fluid.

The thesis ends with a *résumé*, 100 references to the literature, and a number of excellent drawings and microphotographs.

A. J. J.-B.

**THE TREATMENT OF CONGENITAL AND ACQUIRED BRAIN DISEASES BY MEANS OF PUNCTURE OF THE CORPUS CALLOSUM.** (Behandlung der angeborenen und erworbenen Gehirnkrankheiten mit Hilfe des Balkenstiches.) Prof. Dr G. ANTON and Prof. Dr F. G. v. BRAMANN. Pp. 188, with 44 figures and 10 plates. S. Karger, Berlin, 1913.

THE treatment of congenital and acquired brain diseases by means of puncture of the corpus callosum is a most ingenious idea. It is based upon the fact that by this means it is possible to establish a communication between the lateral ventricles and the subdural space, by means of which any dangerous increase of the intraventricular pressure may be relieved. The technique is relatively simple. A small trephine opening is made about  $1\frac{1}{2}$  cm. behind the bregma, and about  $1\frac{1}{2}$  to 2 cm. from the middle line, so as to avoid the great longitudinal sinus and the large pia veins. A small opening is then made in the dura, and a blunt, round-ended cannula pushed through this between the hemispheres along the falx cerebri to the roof of the corpus callosum, and then through this into the ventricle. The cannula is provided with lateral openings, so that cerebro-spinal fluid can easily escape, and after

draining the excess of fluid away, it was found that once this communication had been established, it tended to remain open. Records are given of 52 cases in which this method had been applied. These include hydrocephalus (17 cases), pituitary tumour (5 cases), cerebral tumour (23 cases), epilepsy (4 cases), non-suppurative meningitis (2 cases), and one case with optic neuritis. In none of these cases could any serious accident be attributed to the operation, and the immediate results were good, optic neuritis disappearing, headache being relieved, and all the signs of increased intracranial tension being removed. If the symptoms return, the operation can very easily be repeated. The operation may also be carried out in suitable cases to reduce the intracranial pressure before performing a radical operation for cerebral tumour.

The book is of great interest and value, and affords a good example of a new and original piece of work carefully worked out by the collaboration of a physician and a surgeon, who have spent several years in carefully studying all the technical details necessary for its success. It is illustrated by a number of beautiful plates, which are most instructive, and there is an extensive bibliography.

**THE TRAUMATIC NEUROSES.** (*La Nevrosi traumatica.*) ALBERTO (326) SALMON (of Rome). Pp. 220. Unione Tipografico-Editrice Torinese, Turin, 1913.

THIS monograph presents a very complete and minute study of the difficult problem of the traumatic neuroses. They form a group of cases which are specially interesting, not only from the neuro-pathological point of view, but also from their medico-legal aspect.

After a brief introduction to the subject, a short account of the early literature is given, attention having been first directed to the condition by Brodie in 1837. The etiology is next discussed, followed by a chapter on the symptomatology. This is discussed at considerable length under four headings—(1) symptoms common to neurasthenia, (2) symptoms common to hysteria, (3) psychical phenomena, and (4) symptoms common to organic affections. The different forms of the traumatic neuroses are then considered under the headings of (1) the neurasthenic form, (2) traumatic hysteria, (3) the hysterical-neurasthenic form, and (4) the psychical form. Cases illustrating each condition are described at length. The diagnosis is then considered, special attention being directed to differential diagnosis from other nervous affections, and to those symptoms which exclude simulation and which may be easily simulated. The book closes

with chapters on pathology, on prognosis, and on treatment, and there is finally a bibliography of fourteen and a half pages.

The diversity in opinion which the subject of the traumatic neuroses has produced is too well known to require any attention to be drawn to it. The pathology of the condition is still obscure, the prognosis is uncertain, and the diagnosis is often a cause of dispute, while even the definition of the condition has not yet been satisfactorily established. Professor Salmon's monograph is one of the most complete studies of the condition which have yet been published. The symptoms are examined with great care and at considerable detail. The importance and significance which may be attached to each is carefully considered and analysed, and the way in which the symptoms differ from and coincide with those characteristic of hysteria, neurasthenia, and various organic affections explained simply and clearly.

**FEEBLE-MINDEDNESS: Its Causes and Consequences.** HENRY (327) HERBERT GODDARD. Pp. 599 + 40 plates. 1914. The MacMillan Co., New York. Pr. 17s. net.

THIS book is in the nature of a report on work done at the research laboratory of the training school at Vineland, New Jersey, during the past five years, in an attempt to discover the causes of the feeble-mindedness of the children in the institution. Altogether 327 cases were investigated, of all ages and grades of defect, and no attempt at selecting the cases was made, every case examined being included.

The data was collected by means of trained field workers, who first of all made the acquaintance of each child. The different members of the family were then interviewed. The purpose in view was explained to them, and they were then allowed to talk, the exact words used as far as possible being recorded, and rough family charts were prepared. The results were eminently satisfactory, it being found quite easy to determine the mentality of persons three or four generations back. Finally, field workers often investigated each other's cases to test the accuracy of the results. The greater part of the book consists of the description of the 327 cases examined, a short account of the physical and mental condition of each being given, accompanied in most cases by a photograph, and the pedigree is shown in a chart.

An intelligent person learns to adapt himself to his environment even if no one tells him what to do. A feeble-minded person, on the other hand, does not so adapt himself, and thus is bound to be the victim of his surroundings, because he has not

intelligence and judgment and will power to control that environment. Whatever the feeling towards them, it has always been assumed that they could be different if they would, but the time has now come to ask whether they are not actually incapable of acting differently. Responsibility varies according to the intelligence; we must thus measure the intelligence, and knowing the grade of intelligence we may know the degree of responsibility. Knowing the degree of responsibility we know how to treat. It is the feeble-minded, especially the high-grade type, which make for us our social problems. We know those people do not manage their lives properly, but we have not recognised that they are fundamentally incapable of so doing. The moment that this incapacity is recognised, the problem takes on an entirely different aspect.

The cause of feeble-mindedness is difficult to determine. In almost exactly half the cases here considered the condition was hereditary, and it is interesting to note that insanity in the ancestry has no very potent influence towards causing feeble-mindedness. And not only is this so, but the conviction is here expressed that these two types of abnormal mentality belong to opposite ends of the physical scale, and that insanity is found more amongst individuals who have an over-developed nervous system which requires only a slight shock to cause a break-down. Although most cases of feeble-mindedness arose in families with very bad family histories, where syphilis, alcoholism, tuberculosis, &c., were present, a certain number of cases resulted from accident or illness, of which cerebro-spinal meningitis was the most common, and a few occurred sporadically in normal families. As the result of a careful analysis, the conclusion is arrived at that feeble-mindedness may be treated for practical purposes as if it were a unit character, a fact which is all the more striking after the author's statement that he approached the subject with a strong impression that this was not the case. Finally, it is found that feeble-mindedness is transmitted in accordance with the Mendelian law of inheritance. The last two chapters on "Eugenics" and "Practical Applications" contain many points of great general interest.

As a contribution to the subject of feeble-mindedness, this book will undoubtedly take a very high place. The evidence is presented clearly, and the unbiassed attitude which pervades the book is most convincing. On the other hand, it is difficult at first to accustom oneself to the method of spelling used throughout, such as "brot," "tho," "thru," "thot," &c.

**THE MIND AT WORK: A HANDBOOK OF APPLIED PSYCHOLOGY.** Edited by GEOFFREY RHODES, with contributions by CHARLES BUTTAR, E. J. FOLEY, and Prof. L. L. BERNARD. Pp. viii. + 235. Thomas Murby & Co., London, 1914. Price 3s. 6d. net.

THIS is an interesting little book on applied psychology. It consists of fourteen chapters, of which the first two are by Dr Buttar on the anatomy and physiology of the brain and nervous system. Then follow nine chapters on elementary psychology by Mr Foley, two by the editor on the mechanism of the will and the unity of consciousness, dreams, hypnotism, suggestion, &c., and one by Prof. Bernard on the applications of psychology to social problems. The book concludes with a short bibliography and glossary of psychological terms.

The contrast between the styles of the different authors is very marked, and while the book deals to a considerable extent with nervous physiology and anatomy, a number of medical terms are used with a meaning not ordinarily attached to them, *e.g.*, in the glossary psychosis is defined as "total state of consciousness as existing at any given moment distinguished from the accompanying brain changes." Organic sensations are "those that arise from the body itself, as aches and pains," and inhibition is "the control of nervous reaction." There is a tendency to dwell rather too much on the physiological aspect of the subject, rather than the purely psychological, and the result has been that in places the descriptions have become a little tedious and not always easy to follow by a beginner. The different chapters vary considerably in their interest, but the book undoubtedly errs rather on the side of trying to cover too much ground in too little space, although on the other hand many new points of information may be obtained from it.

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## Obituary

### SIR WILLIAM GOWERS.

ON May 4th, 1915, Sir William Richard Gowers died in London at the age of 70 years.

For those who live in a time when the appearance of encyclopædias of neurology in many volumes occasions no surprise, it is difficult perhaps to realise how restricted were the confines of the science, how meagre its attainments, when the pioneers of



neurological research, of whom Sir William Gowers was one of the foremost, began their epoch-making work in the seventies and eighties of last century. From the year 1879, when Gowers published his Goulstonian Lectures on epilepsy, to 1908, contributions came from his fertile pen which helped not merely to revolutionise neurology, but also to mould neurological opinion and to indicate lines along which research would come to still greater fruition. Gowers' work was essentially formative, in the sense that he was quick to combine the results obtained by other investigators with his own brilliant clinical researches in the prosecution of his great aim, to systematise neurological knowledge, and to reduce chaos to order.

He thus was at once the observer and the expounder: he possessed the faculty of exposition in a pre-eminent degree, and since he was able to draw on abundant stores of clinical material, personally investigated in a critical spirit, the volumes which he published were throughout characterised by richness of clinical data, coupled with wonderful power of deduction and generalisation. His "Manual" of diseases of the nervous system (1886-1888) made his reputation world-wide. No one realised better than he did himself the desirability of bringing the book down to date, yet it remains a monument of industry and a storehouse of neurological information, not excelled by any subsequent volumes of a similar type by other authors. No student of the subject but recognises the permanent value of his "Clinical Lectures on Nervous Diseases," his "Diagnosis of Diseases of the Brain," his "Borderland of Epilepsy," to mention only a few of the contributions which he gave to neurology.

To those who knew him personally as a teacher and instructor his loss is irreparable. In the out-patient department and by the bedside he evinced those sterling qualities of lucidity in analysis and acumen in grasping essentials which belong to genius. He was able to impart to others some of the fascination of which he was conscious in the unravelling of neurological complexities, and many owe to Sir William Gowers their working knowledge of neurological principles and their ability to do their nervous patients justice. To those professed neurologists who have been attached at one time or another to the National Hospital in Queen Square, he was a master, and they his devoted pupils, and to them his memory remains an inspiration and an incentive.

The present high level of English neurology is due in great measure to the life work of Sir William Gowers.

### ALBERT VAN GEHUCHTEN.

THE world of neurology is bereft of one of its leaders in anatomical, pathological, and clinical research by the untimely death of Albert van Gehuchten, professor of the anatomy, pathology, and treatment of diseases of the nervous system in the quondam university of Louvain.

Of the small but very active school of neurology at Louvain van Gehuchten was the life and soul, held in high esteem and affectionate regard by the students who there congregated from all parts of the world, and whose work, under his inspiration, filled the pages of his journal, *Le Nerveux* — contributions which represented a uniformly high standard of neurological attainment. To that journal van Gehuchten himself supplied many notable papers: prominent among them were articles devoted to the elucidation of the complex tracts of the mid and hind brain, the origins of the cranial nerves, the cellular anatomy of the spinal cord, &c. Van Gehuchten was a fine histologist and a master of experimental methods of research, such as the methylene blue method, and the avulsion method for the production of chromatolysis and secondary degeneration. The neurologist, however, ought not to lose sight of his valuable clinical and physiological papers, though no doubt he will be mainly remembered for the brilliance of his experimental researches along anatomical lines.

The tragedy of Louvain was a tragedy for scientific neurology, since van Gehuchten lost the manuscripts of some ten years' investigations when his house was burned to the ground. Yet on coming to the hospitable atmosphere of Cambridge he commenced again with undiminished enthusiasm to prosecute his favourite studies. A suddenly arising acute abdominal condition, from which he failed to rally in spite of a successful operation, brought his active life to a close. He died on December 9th, 1914

**Review**  
of  
**Neurology and Psychiatry**

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**Original Articles**

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**A CASE OF MYOTONIA ATROPHICA WITH A  
FAMILY HISTORY OF CATARACTS, BUT NO  
HISTORY OF FAMILIAL MYOPATHY, AND  
NO MYOTONIC MANIFESTATIONS.**

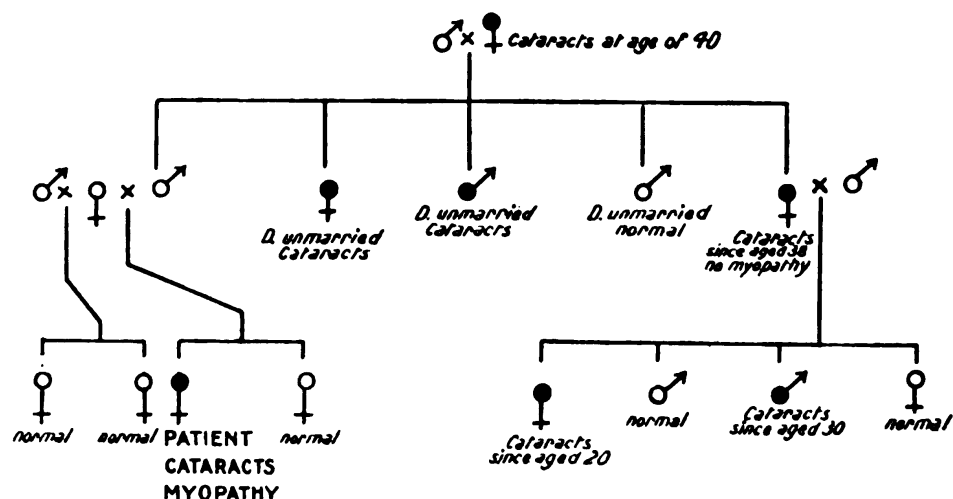
By E. G. FEARNSIDES, M.A., M.D. (Cantab.), B.Sc. (London),  
F.R.C.P. (London),

Beit Memorial Research Fellow ; Assistant Physician to the Hospital  
for Epilepsy and Paralysis, Maida Vale, London, W.

JUDGING by the recorded cases, the distribution of muscular wasting has conformed more nearly to classical descriptions in myotonia atrophica than in any of the other forms of myopathy, and, at the same time, the myotonic manifestations which have given the name to this sub-group of the myopathies have been most variable. In the patient who forms the subject of this communication no myotonic manifestations have ever been observed, and yet the history of familial cataracts and the distribution of the muscular wasting leave no doubt as to the necessity of placing the case amongst those of myotonia atrophica.

M. N., single, at home ; born 1871.

*Family History.*—Her paternal grandfather and grandmother were cousins, and a great-grandfather and great-grandmother on the father's side were also cousins. Her paternal grandmother, at the age of 40, developed cataracts in both eyes. Her father and mother were normal. A paternal uncle and paternal aunt, both of whom died unmarried, developed cataracts before the age of 40. A paternal aunt and two of her children, all of whom I have seen, developed cataracts between the ages of 20 and 38, and at the present time show no evidence of myopathy. The patient herself was one of two children, but by her mother has two older half-sisters, who are completely normal, and her own sister shows neither myopathy nor cataracts. As far as can be



ascertained, there is no other family history of nervous or muscular disease.

*Personal History.*—Until the age of 31 her health was uniformly good, and she was able to take part in outdoor games and enjoy dances, &c. In 1902 she developed cataracts of both eyes, and was operated upon by Mr L. V. Cargill at the Royal Eye Hospital, Southwark. After the operation, her sight, with the aid of high myopic glasses, returned, and since that time has remained unchanged. One day in 1903 or 1904, she is uncertain in which year, whilst at a dance, she found that her neck had become so weak that she could no longer bend her head forward. Since that time she has always noticed some weakness of the muscles of her neck; this weakness has gradually increased, but has varied in

severity from time to time, and her power of supporting her head has got progressively less. In December 1914 she was quite unable to lift her head from the pillow whilst lying in bed without calling in the aid of her hands; she complained that "her head flopped about." In the spring of 1908 she first experienced difficulty in walking, and more especially in getting upstairs. Early in 1914 weakness of her trunk and lower extremities had become so great that she was unable to get up from a chair, and about the same time she began to complain of feelings of "general exhaustion and tiredness after the slightest exertion, with difficulty in speaking for a long time, and at times also of considerable difficulty in swallowing." Nevertheless, she stated that this weakness was not much greater at the end of the day than it was in the early morning after waking, and that the onset of the fatigue was gradual and never extremely rapid.

She was admitted to the Hospital for Epilepsy and Paralysis, Maida Vale, in December 1914, and remained an in-patient for three months. On admission she weighed 7 st. 4 lbs., on discharge 8 st. 2 lbs. When first seen she was generally wasted, and her appearance was somewhat cachectic, but she was not anæmic. Under treatment she put on weight, and at the present time (May 1915) looks extremely healthy. No physical signs of gross disease have ever been discovered in the heart, lungs, vessels, or abdomen, and the urine contains neither sugar nor albumen. The serum reacts negatively to the Wassermann test, and there are no suggestions of syphilis, congenital or acquired.

Her general muscular development is poor and her limbs are small. There is intense local wasting of the trapezii and sternomastoids and of all the deep muscles at the back of the neck; this wasting is bilateral and almost symmetrical. When she attempts to slightly flex or extend her head from the mesial position of rest, the neck muscles "give way," and her head flops forwards or backwards. She is usually unable to lift her head from the pillow when lying in bed without the aid of her hands. The degree of this weakness, however, varies greatly from day to day, and under treatment, with the general improvement in her health, has somewhat diminished. Voluntary rotation of her head on the neck is almost impossible.

All the muscles of both upper extremities are poorly developed, but their tone is normal. The small muscles of the hands are not

more affected than the muscles of the forearms; the extensor and flexor muscles to the wrists and digits are affected equally. The deltoids, biceps, and triceps are fairly developed and moderately powerful. The serratus magnus muscles on both sides are small and weak, but more definitely so on the right side, and both scapulæ are winged. The latissimus dorsi and the lower portions of the pectoralis major muscles on both sides are wasted and defective in power. The supraspinati and infraspinati are relatively well developed. The levator anguli scapulæ muscles are unaffected, and act strongly. The thoracic and lumbar portions of the erector spinæ are not grossly affected, and there is neither lordosis nor scoliosis. The abdominal muscles are well developed, and the diaphragm acts normally.

All the muscles of the lower extremities are small and poorly developed. The left buttock is smaller than the right, but all the gluteal muscles are definitely atrophic and weak. The left great trochanter is extremely prominent. The left quadriceps extensor, and more especially its vasti portions, is small, and in December 1914 was so feeble in power that the patient, whilst lying in bed, was unable to hold up her foot with the knee fully extended. Under treatment with massage some power has now returned. The right thigh is less affected than the left, but the thigh muscles on this side, proportionately to the rest of the muscles of the limb, are small and wasted. The adductors of the left side are smaller and less powerful than those of the right. The anterior tibial muscles are all grossly affected, but all act under volition, and there is no real foot-drop. Both ankles can be dorsiflexed considerably beyond a right angle. The small muscles of the feet are affected to a less degree than the other muscles of the lower extremities.

No fibrillary twitchings have ever been witnessed, and myotonic symptoms have never been observed; relaxation after contraction of the muscles takes place normally. There is no local hypertrophy or pseudo-hypertrophy of any muscle, or group of muscles.

To galvanism and faradism all the muscles react slightly; the responses, however, in the atrophied muscles are small and difficult to obtain. Jolly's myasthenic reaction has never been observed. Myasthenic symptoms cannot be demonstrated in any muscles of the trunk or extremities. She states that the power

in the muscles of her limbs is feeble, and that she easily but slowly tires.

The nails on the hands and feet are normal, and the hair-follicles on the extremities unaffected. The skin over the hands and feet tends to be blue, and presents a sodden appearance. To sensory testing no gross interferences can be discovered. The light touches with cotton-wool, the pricks of a pin, pressure, the vibrations of a fork ( $C=128$ ), sizes, shapes, forms, weights, the localisation of the point touched, the two points of the compasses, &c., are well recognised and named.

On both sides the knee jerks are doubtfully obtained, but no ankle jerks, and usually no plantar responses can be elicited. Wrist jerks and elbow jerks are just obtained. The abdominal reflexes are present. The jaw jerk cannot be obtained. The ocular and pharyngeal reflexes are normal. The left knee joint shows a condition of genu recurvatum. At times, in the past, she has complained of some difficulty in holding her water and motions; this, however, has never been very definite, and whilst the patient has been under observation has not been present.

The pupils react normally to light, convergence, and accommodation. Both upper eyelids tend to droop, but ptosis is not definitely present. Ocular movements are well carried out. She has never suffered from diplopia or squint, and nystagmus is absent. Cataracts have been removed from both eyes, but there are still some fragments of opaque lenticular tissue in both eyes. The face is thin, angular, and flat; its movements are of full range and symmetrical. She can blow out her cheeks and whistle. The masseter and temporal muscles are small, but contract powerfully. The tongue is well developed; it can be protruded straight and held steadily. The movements of the palate and larynx are normal. At times under observation she has had some difficulty in swallowing, and says that she easily tires with talking; since January 1915, however, these symptoms have been less troublesome than formerly. No myasthenic weakness of the tongue can be demonstrated. The special senses are unaffected and the fundi appear healthy. Vision, with glasses for her myopia, is fair. Taste, smell, and hearing are normal.

She is well informed, contented, attentive, and not emotional. Memory is good. Her voice has a nasal tone. She sleeps well, and suffers neither from headache nor from attacks of vomiting.

There is no evidence of disease in the thyroid, thymus, pituitary, or adrenal glands.

The distribution of the muscular wasting is myopathic in type. The muscles chiefly involved are the sternomastoids, trapezii, deep muscles of the neck, serratus magnus, latissimus dorsi, supraspinati, glutei, vasti and anterior tibial muscles, and to a less extent the muscles of the forearm. The cheek muscles are certainly involved, and I think that the facial muscles are also slightly affected. This distribution of atrophy is similar to that seen in cases of myotonia atrophica, except that the deep muscles of the neck are more atrophic than they have been in any case of myotonia atrophica of which I have seen any record.

As far as I have been able to ascertain, the frequent association of familial and hereditary cataracts with muscular wasting amongst the myopathies only occurs in myotonia atrophica. Greenfield (1) first recorded this association; in the family recorded by him, seven cases of cataract and four of myopathy occurred in three generations. Hoffmann (2) in 1912 analysed the cases of myotonia atrophica recorded in the literature up to that date, and found that in 10 per cent. (eight out of eighty) of cases of myotonia atrophica this association had occurred. He noted that they were families in which some members showed cataract without myotonia atrophica, others myotonia atrophica without cataract, and still others both myotonia atrophica and cataract. This association of myotonia atrophica and cataract has also been recorded by Ormond (3), Obendorf and Kennedy (4), Tetzner (5), Hirschfeld (6), myself (7), Bramwell and Addis (8), and seems to me to form additional ground for classifying this case amongst those of myotonia atrophica.

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## A CROSSED REFLEX IN DIPHTHERIA, ELICITED BY STIMULATION OF THE QUADRICEPS FEMORIS MUSCLE.

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A REFLEX movement of flexion at the hip joint and extension of the great toe, induced by stimulation of the quadriceps femoris muscle mass of the opposite limb, was originally described by the writer<sup>2</sup> in a case of cerebral tumour. In a later communication,<sup>3</sup> in collaboration with E. D. Macnamara, five additional examples of the reflex were given, and the presence of pain on application of the stimulus was emphasised. Reference was made to similar crossed reflexes described by several French writers, and the bearing of such reflexes upon the existence of automatic spinal centres was discussed.

*Mode of Induction.*—The patient lying in bed with the legs extended, the quadriceps muscle mass is firmly grasped between the thumb and fingers of one hand. When the reflex is present, flexion at the hip joint and extension of the great toe of the contralateral limb take place. Occasionally fanning of the smaller toes occurs. In some cases, regarded as negative, the reflex is represented simply by a contraction of the tensor fasciæ femoris muscle. Pain is invariably produced in eliciting the reflex, and is referred to the site of stimulation. The amount of pain varies considerably, and diminishes in intensity as the reflex becomes less active. In cases where the reflex is absent, and in positive cases after the reflex disappears, the stimulation is entirely painless. Repeated stimulation will sometimes elicit the reflex when a single stimulus has failed.

The present paper deals with the reflex in diphtheria. Twenty-five consecutive cases of faucial diphtheria, in which the diagnosis was confirmed bacteriologically, were investigated during periods varying from five to fourteen weeks, depending upon the length of stay in hospital. The patients included male and female, and the ages ranged from 3 to 8 years.

*Incidence and Duration of the Reflex.*—Nine cases, or 36 per

cent., presented the complete crossed reflex of flexion at the hip joint, and extension of the great toe.

Ten cases, or 4 per cent., presented a crossed extension of the great toe without flexion at the hip joint.

One case presented only crossed flexion at the hip joint.

Six cases, or 24 per cent., presented no crossed movement.

Several of the positive cases presented an ipsilateral extension of the great toe.

The reflex was bilateral in 15 cases; its persistence on the two sides, however, varied in duration.

The reflex appeared as early as the second day of disease, and persisted as late as the eighty-fourth day. It usually appeared at the beginning of the second week, and lasted until the end of the third week. In one case it reappeared after being absent for several days.

*Nature of the Attack.*—The complete reflex occurred chiefly, but not exclusively, in cases of moderate or marked severity. In the mild cases the reflex was absent, or feebly marked. In the one toxæmic case, fatal on the fourth day, the reflex did not appear.

*Sensory Changes.*—Sensory changes occurred in one case only. They were of such a marked nature as to suggest, along with the reflex changes, an incomplete form of myelitis (myélite fruste). The crossed reflex was bilateral, extremely active, and persistent.

The case was one of very severe faucial diphtheria, in which palatal, pharyngeal, diaphragmatic, and so-called "cardiac" paralyses developed. The reflex was first sought for and noted on the twenty-sixth day, and persisted until the eighty-fourth day, disappearing before the patient was discharged. Crossed flexion at the hip joint was constant, and present equally on the two sides. Crossed extension of the great toe was variable. Babinski's sign appeared first on one side and later was bilateral, being replaced by a flexor response on the sixty-second day. The knee jerks were persistently absent after the twenty-fourth day. On the thirty-first day the patient complained of pain in the legs. On examination extreme cutaneous hyperalgesia was found to be present over the lower abdomen, back, and lower limbs. The hyperalgesia was sharply limited above at the level of the first lumbar spine behind, and in front about 1 in. above the symphysis pubis, and along an almost straight line between these two points, thus strongly suggesting a segmental distribution. Below, the hyperalgesia extended over both buttocks, a circular area around the anus 4 in. in diameter being, however, entirely free from hyperalgesia. On the legs the limits were less well defined, but the hyperalgesia extended over the greater part of each leg, the sole of each foot and the toes remaining normal. Two days later the area of hyperalgesia extended over the whole of the lower limbs, over the buttocks, excluding the region around the anus, over the trunk as high as the level of the

fifth rib in front and about the level of the second dorsal vertebra behind, the posterior limit being ill-defined. The following day the hyperalgesia was less widespread and less acute, and it disappeared completely on the thirty-sixth day. No other sensory changes were noted. Deep pressure along the nerve trunks failed to elicit pain. Power of movement was retained at all joints throughout.

*Motor Changes.*—No absolute loss of power was present in any case, extreme weakness was present in two cases, no spasticity was present, but some rigidity of gait was noted in several cases. The rigidity was usually confined to one leg, and had no definite relationship to the character of the crossed reflex.

*Other Reflexes.*—Knee jerks.—The knee jerks were abolished in 12, and were diminished in the remainder of the 19 cases in which the crossed reflex occurred.

Plantar Response.—Babinski's sign occurred in 10 of the positive cases.

Ankle Clonus.—This was absent in all cases.

Oppenheim's reflex was present in 6 cases.

Gordon's reflex was present in 3 cases.

Ipsilateral extension of the great toe occurred in about half the positive cases.

In the 6 cases which presented no crossed reflex the knee jerks and a flexor plantar response were retained.

*Pathogeny.*—The paralysis following diphtheria is generally held to be due to a parenchymatous degeneration in the peripheral nerves. Batten,<sup>1</sup> in a study of 6 cases by Marchi's method, found degeneration of the grey matter of the spinal cord in 3 cases, but concluded that the dominant lesion was a parenchymatous degeneration of the peripheral nerves. J. D. Rolleston<sup>4</sup> found Babinski's sign present in 20 per cent. of cases investigated clinically. He attributed the extensor response to a temporary perturbation of the pyramidal system. In the present series a crossed reflex occurred in 76 per cent. of cases. Taken in conjunction with the presence in one case of extreme hyperalgesia of segmental type, such a crossed reflex would seem to point to definite changes in the spinal cord.

In mild cases the lesion may be of a toxic nature, producing a temporary perturbation of the pyramidal system; in more severe cases it may approximate to an incomplete myelitis (myélite fruste), as described in enteric fever and other acute infections.

*Summary.*—A crossed reflex of the following nature was found in 76 per cent. of cases of diphtheria: on stimulating the quadriceps femoris muscle mass a reflex movement of flexion at the hip joint and extension of the great toe of the contralateral limb resulted, and was accompanied by pain, referred to the site of stimulation. In half the cases the reflex was incomplete, and consisted only of extension of the great toe. This reflex would seem to point to involvement of the spinal cord in a larger proportion of cases than is generally recognised, and it suggests that the motor weakness, ataxia, and loss of knee jerks may be largely dependent upon a central lesion of a toxic or inflammatory nature.

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## PELLAGRA.

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PRIOR to 1909 it was generally believed that pellagra was found principally in Italy, Southern France, Roumania, Spain, and Egypt, that it did not exist in Great Britain, and that it was due to the eating of maize. In that year interest in the disease was aroused in this country, by the report by Cranston Low and myself, of a case occurring in Edinburgh. No attention seems to have been paid to the subject after Howden published notes of a typical case occurring in Montrose in 1866. Since 1909 many other indubitable cases have been recorded, and it is now clear that pellagra is by no means uncommon in the British Isles. In 1914 I saw two cases in Perthshire to which I shall refer again. In America it was thought that pellagra existed in only a few of the States, but it is now realised that at least forty of them have pellagrous patients, who can be numbered by tens of thousands. The probable explanation of the disease not being diagnosed is, that its presence was not considered possible, and

a diagnosis of syphilis, scurvy, diarrhoea, eczema, leprosy, or other skin condition was made.

#### GEOGRAPHICAL DISTRIBUTION.

Pellagra has a very wide distribution. It occurs in Europe, especially in Italy, Southern France, Spain, Portugal, Roumania, the Balkan States, Austria-Hungary, Russia, and Turkey. It is present in Asia Minor and India. It is rapidly spreading in Egypt, and it is known to exist in Algeria, Tunis, and Southern Africa. It is found in South America as well as in the United States.

#### CAUSATION.

Up till a few years ago, it was generally accepted that maize was responsible for its causation, but opinions differed as to how the disease was brought about. The following theories as to its etiology have been put forward:—

1. It is stated that a diet largely composed of maize, because of its low nutritive value, is sufficient to bring about the disease.

2. It is thought that the exciting cause is a deleterious substance normally present in the corn.

3. It is held by some authorities that maize favours the growth of bacteria, especially *Bacillus coli*, in the intestines, and that the toxins produced set up the disease.

4. Tappeiner and Lode state that there is present in the corn a substance which sensitises the skin to light, and that this is the important agent.

5. The theory which has the largest support is that elaborated by Lombroso. He maintains that pellagra is the result of the ingestion of damaged maize, in which is found a substance which he called pellagrozein. He considers that his views were strengthened by experimental work, *e.g.*, the feeding of animals, &c. Many observers, however, have failed to corroborate Lombroso's work.

6. The disease is believed by others to be due to the eating of corn infected by *aspergillus* or *penicillium*, the spores of which, or the toxins produced by them, acting as the exciting cause.

*Objections to the Corn Theory.*—As pointed out by Sambon, the measures adopted in Italy, under an Act of Parliament, of notify-

ing all cases of pellagra, of inspecting and drying maize, of instituting proper bakeries, &c., have failed to reduce the incidence of the disease in that country. In Spain, on the other hand, where no prophylactic measures have been taken, pellagra has diminished to a remarkable degree. Spanish physicians have never accepted the theory of the Zeists. The seasonal recurrence of the disease cannot be due to any toxin which may be present in maize, especially when the patient has long ceased to take it; nor can this theory explain why those people living in country districts near to rivers are the principal sufferers, while the town dwellers are practically immune. Moreover, so many undoubted cases have been recorded in this country, America, Italy, and other places in which maize has never been partaken of, that it must now be set aside.

In the spring of 1914 I had the opportunity of visiting a pellagrosario and two asylums in Northern Italy, where I saw more than two hundred cases of pellagra. I was told that nearly all the patients were field workers, and that they had all eaten maize. When I stated that many pellagrous patients had been seen in Scotland and England within recent years, and that there was no possibility of corn being the etiological factor in many of them, my remarks were received with kindly scepticism. These cases were considered to be "pseudo-pellagra." Those who still hold to this old theory take up quite an unscientific position.

7. A filaria and an amœba have been held responsible for its causation, but without sufficient evidence. Their presence is not uncommon, but they are merely complications of the disease.

8. Tizzoni has stated that he has isolated the "*Strepto-bacillus pellagræ*" from the blood, cerebro-spinal fluid, and tissues of pellagrins. He has shown that this organism differs bio-chemically, microscopically, and in cultural growth from streptococcus and staphylococcus, both of which it resembles. Tizzoni, moreover, reports that he has been able to transmit the disease to monkeys by the inoculation of the organism, and the experimental work of Harris corroborates this. The latter observer found that by filtering some of the tissues of a patient, and by injecting the filtrate into monkeys, he was able to produce many of the symptoms of pellagra, as well as the pathological changes found in man. Other observers have failed to confirm these results.

9. Another theory which has not received much support is that

of Alessandrini and Scala, who hold that a deficiency of alkaline salts in water is the primary cause. Without these, silica, which is normally present in water, cannot be neutralised, and its presence gives rise to the disease.

10. Poverty and bad hygienic surroundings have been suggested, but these are not alone responsible for the onset of the disease, because it is well known that it occurs in people in good circumstances.

11. The lack of wine, and too much wine, as a cause, may merely be mentioned to be set aside.

12. A theory which has given rise to a considerable amount of controversy is that suggested a few years ago by Sambon. He believes that pellagra is a parasitic disease, probably protozoan in character, and that it is propagated by a blood-sucking insect. Sambon and Chalmers consider that a simulum or sand fly and leptoconops are the probable carriers of the disease. The well-known seasonal recurrences of the symptoms support this theory. They last, in the majority of cases, for several years, even after the patient is removed to a district where the disease is non-existent, and when maize is eliminated entirely from the diet. Sambon considers that these alternating phases can be due only to an organism which passes regularly through an active and a latent stage. It was found by him, on thorough investigation, that pellagra is confined to certain well-defined rural areas, in each of which is a swift-running stream, and that the disease is more prevalent among those living in close proximity to the river, than in those residing at some distance from it. Only imported cases are found in towns. He is of opinion that in most countries a simulum acts as the carrier of the disease, because it is present in all the districts where pellagra exists, and its appearance coincides seasonally with the onset of the symptoms. Larvæ and pupæ of this insect are readily found in the streams. Beyond the areas where the fly is present, no pellagra exists, except in those who are employed in the fields near the rivers, although the inhabitants of the surrounding districts are of the same class, and live under the same conditions. In his investigations in Lower Egypt, Chalmers was unable to discover any simulii, but leptoconops was found in abundance, and these insects were stated by the peasants to cause them much irritation. Little is known of the life history of this insect.

I am indebted to Mr Grimshaw, of the Royal Scottish Museum, Edinburgh, for the following notes on simulum:—"We have several species of the sand fly (simulum) in Scotland, some of which are very common. They are rather small, and may often be found among the foliage of trees in the neighbourhood of streams. The larvæ inhabit running water, in which they move about freely with the aid of silken threads, which they stretch from weed to weed, or stone to stone. They also turn to pupæ in the water, first constructing a little case for protection. The pupæ can often be found attached to submerged stones. The mature flies have the irritating habit of flying about the level of one's eyes, darting rapidly at the face and forehead, and sometimes proving very irritating."

Mr Coates, of the Perthshire Natural History Museum, informs me that "*Simulium reptans* (with which Theobald includes *Simulium elegans*) is said to be generally distributed in England, Scotland, and Ireland. *S. macolata* (with *S. marginata*, *S. lineata*, and *S. fuscipes*) is confined to England, and is not common even there. It is almost certain that *S. reptans* would prove to be fairly common in Perthshire if search were made for it, as we have just the sort of rapid mossy stream and waterfalls that the larvæ frequent. We have five Perthshire specimens in the Museum named *S. ornatum* which probably are *S. reptans*."

The pupæ and flies are found in great numbers, especially in April and May, and again in August. Sambon's supposition is that the parasite moves towards the surface of the body (the erythema) in the spring and autumn, to meet the liberating carrier. Within the last few years, this parasitic theory has received the support of Sir Patrick Manson, Castellani, and Chalmers. Many authorities in Italy, America, and other countries also favour it. Siler affirms that "in the United States simulum is being found wherever there is pellagra."

An objection which has been raised to this theory is that the simulum has a much wider distribution than pellagra. This is of no importance, as the same holds true of the mosquito and malaria.

Unfortunately there is the chief objection that no protozoa or bacteria have been found in the insect, or in the pellagrin, but this does not disprove Sambon's belief.

13. The Thompson-M'Fadden Commission, which carried out



its investigation in Spartanburg, South Carolina, found that pellagra was most prevalent among women employed in house-work, and that it affected people in rural districts and of insufficient means. No difference existed in the diet of pellagrins and non-pellagrins. The Commission stated that "there was no evidence pointing to corn as an etiological factor." Although simulium is abundant, they failed to obtain any history of the biting of patients, but they considered that if a blood-sucking insect is important in the spread of the disease, the stable fly (*Stomoxys calcitrans*) seems to be much more probable. It is more abundantly found, however, at a somewhat later date than the maximum intensity of pellagra.

They are inclined to think that the contamination of food by the excretions of pellagrins may be important.

Samson does not consider the stable fly an important agent in the spread of pellagra.

#### CLINICAL DESCRIPTION.

This is a disease which attacks persons of all ages, and both sexes. I have seen it, in Italy, in children of a few months old. It is generally considered that it is not hereditary. The incubation period is probably not more than three or four weeks. The disease may last for a few months in the acute type, but it may persist for thirty years or more. The characteristic feature is that the symptoms make their appearance in spring or early summer, rarely reappearing in autumn, to disappear during the winter. They set in again during the following spring, and this recurrence may continue for many years. The onset of the disease is gradual, and the patient complains of a feeling of malaise, pain, and heaviness in the head, and general depression. The symptoms are best considered under the following headings:—

(a) *Alimentary Symptoms*.—There is first of all a loss of appetite, and a coated tongue, which in a few days becomes red at the tip and margins, and later over the whole of the dorsal aspect. The papillæ are prominent, and fissures may appear. This condition is often spoken of as a "bald tongue." The buccal mucosa becomes inflamed and ulcerated, and because of the stomatitis the patient may be unwilling to take any food, but it is important to note that many pellagrins have an insatiable hunger. All the food has a salt or bitter taste, hence the popular name in

Venice of "mal salso." The salivary glands and the œsophagus are often inflamed. The patient complains of a severe burning pain in the region of the stomach, and suffers from flatulence, vomiting, and diarrhœa. There may be intense thirst, but sometimes the patient may refuse to drink water. The stools are often very liquid, and usually contain mucus, and sometimes pus and blood. They may be very offensive. Constipation is rarely present.

(b) *Cutaneous Symptoms*.—They consist of an erythema of a bright red colour in the early stage, which may become a dermatitis of a chocolate-brown hue. In those cases which are slightly affected, the erythema is often mistaken for sunburn. It is bi-laterally symmetrical, and it affects those areas of the skin which are usually exposed to the light. It is most frequently found on the dorsal aspects of the hands and on the face and neck, but it is very commonly present on the flexor surfaces of the forearms, on the elbows, the upper part of the chest, the back, and legs. It is rarely found on the pudenda. There is a well-defined, raised margin. As the disease progresses, the affected parts become swollen and tense, and vesicles or bullæ may develop. The patient complains of a burning and tingling sensation in these areas. After a varying time, the eruption disappears, leaving the skin thickened and pigmented. In chronic cases the skin becomes atrophied.

While the sun seems to have the effect of intensifying the rash, the erythema may develop while the patient is confined to bed. Indeed, it is reported that the wearing of gloves and boots does not prevent its appearance on the hands and feet.

(c) *Nervous System*.—The outstanding symptoms under this heading are pain in the lower dorsal or lumbar region, hyperæsthesia at each side of the spinal column and in other parts of the body, humming noises in the ears, and sleeplessness. There is muscular weakness, with inability to stand or walk in severe cases, spasticity of the legs, with increased knee jerks, followed by loss of this reflex. Babinski's sign is sometimes obtained. There may be vertigo, fine tremors, or epileptiform convulsions, with or without loss of consciousness. Muratori describes a gustatory aura as occurring in one case. Nystagmus, photophobia, diplopia, optic neuritis, and optic atrophy have been described as occurring in some cases.

(d) *Mental Symptoms.*—It is stated that from 5 to 10 per cent. of pellagrins in Italy develop insanity, while in America the majority of cases have been observed in asylums. With regard to Egypt, Warnock states in his report for 1913 that "pellagra has now become the greatest cause of insanity in Egypt, and of deaths among the insane. It accounts for over 17 per cent. of the admissions, and one-third of the deaths in the asylum." Nearly all the cases recorded in this country have been patients in mental hospitals. It is important to differentiate between insane people who develop pellagra, and those who are insane as a result of this disease. Most authorities are agreed that it is merely an exciting cause of well recognised forms of mental disorder, but some believe that pellagrous insanity has its own special characteristic symptoms. The chief types are best classified as mental depression, acute confusion, and dementia, which may be of the præcox or senile form. Of the three patients in Scotland, which I have seen, two were suffering from melancholia, with considerable apprehension and agitation, and one was a case of acute confusion, with auditory and visual hallucinations and disorientation.

The confusional type of mental disturbance tends to occur early in the disease, and it may be recovered from.

It is said that the pellagrous melancholic usually exhibits a slight degree of confusion and suspicion.

Sometimes the psychosis is pseudo-progressive paralytic in character, and a pseudo-tabetic form has occasionally been described.

(e) *Other Symptoms.*—In some cases, especially in "typhoid pellagra," which usually occurs several years after the onset of the disease, there is a rise of temperature, perhaps to 104° or 105°, with a corresponding increase in the pulse rate. Anæmia, with a relative increase of small lymphocytes, is commonly present. The urine is usually acid, and of low specific gravity. There may be albuminuria. Leucorrhœa is commonly found in female patients.

#### PROGNOSIS.

This is very bad in the acute typhoid form of the disease. Those patients who suffer from one or two mild attacks may recover. Those who do not recover may live for many years,

although the illness recurs every spring. Cachexia and dementia may ultimately develop. Fever, prolonged diarrhoea, prostration, and mental confusion are bad prognostic signs. Roberts says that "the pulse, temperature, weight, and diarrhoea are far better signals to watch and to follow than any evanescent colouring and scaling of the skin," while Merk believes that extensive dermatitis is a bad sign. The death-rate varies from 4 to 15 per cent.

#### TREATMENT.

Arsenic in full doses seems to give the best results. It may be prescribed as liquor arsenicalis, atoxyl, or salvarsan. Some authorities have obtained considerable benefit by the use of the last named drug, but others have been unable to observe any improvement from its administration. Sandwith advocates the use of bone marrow. Several American physicians claim to have had very good results following the transfusion of their patients with blood serum obtained from cured pellagrins, or from persons who have never suffered from the disease, but other observers failed to bring about any change in the condition of their patients by this method of treatment. Urotropin, iron, and mercury have also been advocated.

#### PATHOLOGICAL ANATOMY.

Considerable wasting of the subcutaneous and muscular tissues is found, and the heart, liver, kidneys, and spleen undergo fatty degeneration, sometimes accompanied by a pigmentary deposit. The walls of the stomach and intestines are usually thinner than normal, and in acute cases these organs are inflamed. Ulcers may be found in the small and large bowel, specially towards the lower end.

Mott found no evidence of meningo-encephalitis or meningo-myelitis. Degenerated fibres were present in the sciatic nerves and in the cauda equina, while in the cord the crossed and direct pyramidal tracts and the tracts of Gowers and Goll showed slight general diffuse sclerosis. In the cells of the posterior spinal ganglia, and of Clarke's column, marked chromatolysis was present. Degeneration in varying degrees was observed in the cells of the anterior horn and in those of the pons and medulla.

Less marked changes were seen in the Betz cells of the cortex, and also in Purkinje's cells, while the cortical pyramidal cells did not appear to be markedly affected. Mott considers that these pathological findings contraindicate the protozoan theory of the origin of pellagra, although they do not altogether disprove it.

Kinnier Wilson, from an examination of thirteen cases, believes that the pathological findings are those of a widespread generalised toxæmia of the peripheral and central nervous system. He considers that the toxin may be of alimentary origin, which, getting into the lymph stream, invades the cord along the posterior nerve roots.

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## Abstracts

### ANATOMY.

**A STUDY OF THE AMERICAN NEGRO BRAIN.** C. W. M. POYNTER (329) and J. J. KEEGAN, *Journ. Comp. Neurol.*, 1915, xxv., June, p. 183 (7 figs.).

NINE adult male brains, three adult female brains, and one full-time foetal brain (female) were examined.

There is an essential difference between the Negro and the Caucasian brain. This consists of a fairly constant variation of the Negro brain from an imaginary average type of fissuration obtained by a study of a large number of Caucasian brains. But the Negro type thus established lies within the limits of individual variation for the Caucasian, hence it is not possible to establish a single morphological feature which can be claimed as absolutely characteristic.

The relative characteristics of the Negro brain do not necessarily all denote inferiority or closer relation to the apes, but perhaps it is safe to say that the balance of evidence sustains the long-held idea of the inferiority of the Negro.

This inferiority is expressed mainly in the frontal lobe by a flattened anterior association centre representing actual deficiency of growth. This growth deficiency is farther evidenced by rostration, by the narrow gyrus frontalis medius, by the wide gyrus frontalis superior, and by the irregularity of the fissures in the gyrus frontalis inferior. General features, supposed to have a like significance, are low average brain weight and generally greater simplicity of fissuration. In the posterior association area activity of the growth process is expressed by a prominence of this region, by an operculum over the adjoining cortex, and by the presence of a very prominent accessory sulcus in the region.

A. NINIAN BRUCE.

**CORTICAL LOCALISATION AND FURROW FORMATION.** (330) GEOFFREY JEFFERSON, *Journ. Comp. Neurol.*, 1915, xxv., June, p. 291 (1 fig.).

THE author's conclusions are as follows:—

"That to say that furrow formation depends alone either on cortical specialisation or on growth antagonism is not to be sufficiently explicit. Furrow formation depends primarily on

evolutionary antagonism between the neopallium, which is constantly acquiring new areas, and its fibro-osseous capsule, the skull. The furrows thus originated tend to appear at the edges of areas possessing cyto-architectural differences. In the primate brain furrow formation depends on constant factors throughout the order. The highly convoluted brains of carnivora, ungulata, and cetacea argues a mode of origin different from that existing in the primates."

A. NINIAN BRUCE.

**THE VAGUS NERVE OF THE SNAPPING TURTLE (*Chelydra* (331) *serpentina*).** S. WALTER RANSON, *Journ. Comp. Neurol.*, 1915, xxv., June, p. 301 (9 figs.).

THE vagus of the turtle divides high in the neck into a cervical and a thoraco-abdominal ramus. The cervical ramus is composed almost entirely of myelinated fibres, and the cells of the cervical ganglion of the vagus are associated with the fibres of this ramus only. The thoraco-abdominal ramus is composed chiefly of unmyelinated fibres among which are scattered myelinated fibres. It presents as it passes under the plastron an enlargement, the thoraco-abdominal ganglion, the cells of which are associated with the fibres of this ramus only. The unmyelinated fibres are present in about the same proportion and distributed in the same way in the vagus of the turtle as in that of the mammal. The unmyelinated fibres in the vagus are not postganglionic visceral efferent fibres arising from sympathetic cells in the ganglia of that nerve. The preganglionic visceral efferent fibres of the vagus do not become transformed into unmyelinated fibres in their course down the vagus.

A. NINIAN BRUCE.

## PSYCHOLOGY.

**REMARKS ON THE INTERPRETATION OF DREAMS ACCORD-**  
(332) **ING TO SIGMUND FREUD AND OTHERS.** F. ST JOHN  
BULLEN, *Journ. Ment. Sci.*, 1915, lxi., Jan., p. 17.

THE author of this paper shows an intimate knowledge of Freud's work, and deals seriatim with the various segments into which Freud's work is divided. The material forming the dream, the source of the dream, the constitution of the dream, and many other points in connection with dreams are considered. Dr Bullen deals with the subject in a most interesting way, and his paper does much to explain many points in connection with this difficult subject.

GEORGE R. JEFFREY.

**LOSS OF MEMORY ALLEGED BY MURDERERS.** THEODORE (333) DILLER, *Journ. Nerv. and Ment. Dis.*, 1915, xlii., Feb., p. 73.

THE author believes that very commonly murderers have a *real* loss of memory for the actual killing, even although they might remember events up to within a very short period of the act, and very shortly afterwards. This loss of memory is explained on the ground of great emotional disturbance at the time the act is committed.

D. K. HENDERSON.

### PATHOLOGY.

**THE NEURO-PATHOLOGICAL FINDINGS IN A CASE OF (334) PERNICIOUS ANÆMIA WITH PSYCHICAL IMPLICATION.** J. A. F. PFEIFFER, *Journ. Nerv. and Ment. Dis.*, 1915, xlii., Feb., p. 75.

THE microscopic examination of the brain revealed changes both in the cortex and white matter of the hemispheres. There was a swelling of the ganglion cells, hyperpigmentation, and a certain amount of proliferative and progressive change in the glia. Subcortical areas of fibre degeneration were found particularly in the motor and frontal regions of the white matter.

Sections from the cervical and dorsal cord showed definite degeneration of the posterior columns and a light-grade diffuse alteration was perceptible in the lateral columns.

The case is held to be one of special interest, owing to the fact that anatomical alterations not only occurred in the spinal cord, but were demonstrable in the brain.

The changes in the nerve cells were similar to those seen in cases of chronic and subacute toxæmia.

D. K. HENDERSON.

### CLINICAL NEUROLOGY.

**THE IMPORTANCE OF FUNCTIONAL ACTIVITY IN THE (335) ÆTIOLOGY OF NERVOUS DISEASES.** W. JOHNSON, *Quart. Journ. Exp. Med.*, 1913-14, vii., p. 403.

EDINGER has long ago expressed his belief that symptoms are, in large part, exhaustive phenomena, and that they are closely associated with the nature of the patient's activities. This is to be contrasted with the "theory of the selective action of toxins," the reason why the action is selective having to be still explained.



The author concludes that a poison which circulates through the body, though it may show some particular selective action for various parts, does not cause sufficient damage of itself to produce symptoms. These symptoms only occur through the agency of another factor—functional activity—and failing the presence of this additional factor, the patient may never develop any definite disease, although his general power of activity may be considerably lessened. Thus but a small percentage of patients with syphilis develop symptoms of tabes and general paralysis. Further, when these do develop they do not appear, as a rule, until several years (ten or more) after the primary infection. This is in marked contrast to true cerebro-spinal syphilis, which tends to occur in as many months. The same wide difference is shown in the results of treatment of the two conditions. Antisyphilitic treatment in tabes and general paralysis causes little, if any, improvement.

Inquiry into individual cases shows that there is a close association between a patient's symptoms and the nature of his activities; and various poisons, although widely different in nature, do tend to produce clinical conditions which nearly approach each other. As examples, the toxins of syphilis, alcohol, and lead produce respectively: (a) Tabes, tabo-paresis, and general paralysis; (b) alcoholic neuritis, Korsakow's syndrome, and alcoholic dementia; (c) lead neuritis, dementia, and a combination of both conditions. Further, both alcohol and lead produce weakness of the extensors of the forearm (so-called selection of the musculo-spiral nerve) while sparing the supinator longus. Often other muscles supplied by the median and ulnar nerves are affected, and it is accordingly quite impossible to explain them by selection, different muscles being affected in different patients.

The nervous system, therefore, in these forms of chronic toxæmias, is to be regarded as subnormal, owing to the presence of the poison. The individual is indeed a potential patient, who, if put under any sufficient exacting conditions, will inevitably develop symptoms in the part exhausted. On this view the multiplicity of symptoms which occur in such conditions as tabes or alcoholism becomes more intelligible.

It seems possible that a patient's mode of life and particular form of activity may be just as important in the determination of his symptoms as, in the Darwinian theory, similar conditions are in the production of "special character."

Treatment must thus be directed to remove such conditions, which, if persisted in, would inevitably produce symptoms.

A. NINIAN BRUCE.

**VALUE OF SPONTANEOUS EXTENSION OF THE HALLUX IN**

(336) **LESIONS OF THE PYRAMIDAL TRACTS.** (*Valore dell'estensione spontanea dell'alluce nelle lesioni delle vie piramidale.*) C. PASTINE, *Riv. di Patol. nerv. e ment.*, 1914, xix., p. 21.

SICARD, in 1911, drew attention to spontaneous extension of the hallux as a sign of pyramidal reaction. He had observed it in numerous organic hemiplegias, in a meningeal syndrome due to insolation, in a case of tuberculous meningitis, in spastic paraplegia, &c., and it seemed to him that (1) the symptom was of special interest when it was difficult to demonstrate Babinski's sign, or when plantar hyperæsthesia was the cause of too active reactions of defence. (2) If, as a rule, it was associated with the signs of Babinski, Marie-Foix, and Oppenheim, it might occur independently.

Pastine records a case in a woman, aged 28, suffering from convulsive attacks in whom the other signs of pyramidal affection were absent, but with a spontaneous unilateral extension of the hallux. Wassermann's reaction was positive, and recovery followed specific treatment. Pastine has also found the sign in hemiparesis, paraparesis, infantile spastic diplegia, and general paralysis (*v. Review*, 1915, xiii., p. 163). J. D. ROLLESTON.

**ON THE CLINICAL VALUE OF THE OCULO-CARDIAC REFLEX.**

(337) (*Sul valore clinico del riflesso oculo-cardiaco.*) N. ORLANDI, *Riforma med.*, 1915, xxxi., pp. 232-235, 260-263, and 288-291.

ORLANDI reviews the literature and records his personal observations on normal individuals, and on patients suffering from various forms of heart disease, infectious diseases, especially convalescents from typhoid fever, thyroid syndromes, and other conditions such as tabes, epilepsy, and hysteria. His principal conclusions are as follow :—

The reflex is lost in chronic aortitis.

In tabes its absence is constant.

It is exaggerated in vago-tonic syndromes and inverted in sympathico-tonic syndromes. J. D. ROLLESTON.

**THE REFLEXES IN TABES.** (*Considerazioni sui riflessi e sul loro*

(338) *andamento nel decorso della tabe dorsale.*) A. DENTI, *Riv. di Patol. nerv. e ment.*, 1914, xix., p. 1.

DENTI examined fifty tabetics with the following results:—In 44 per cent. both the knee jerks and tendo Achillis reflexes were abolished on both sides; in 16 per cent. both knee reflexes were

present on both sides; in 18 per cent. the tendo Achillis reflexes were lost, and the knee jerks were present; in 14 per cent. the tendo Achillis reflexes were lost, and the knee jerks on one side were present; in 4 per cent. the knee jerks were present, and the tendo Achillis reflexes were absent on one side; and in 4 per cent. the reflexes were present on one side only.

The tendon reflexes of the upper limb persisted longer than those of the lower. The triceps reflex disappeared first, and then the biceps. The radial reflex persisted longest.

Of the cutaneous reflexes the cremasteric on one or both sides persisted longest, while the epigastric was the reflex most frequently lost.

Denti did not find any relation between the change in the cutaneous reflexes and the severity of the attack.

In many cases of commencing tabes both tendon and cutaneous reflexes were exaggerated, thus indicating an irritation stage preceding the stage of destruction.

Affection of the sphincter iridis was one of the earliest objective symptoms of tabes. Apart from the Argyll Robertson pupil which never underwent any change, Denti found that all the reflexes might reappear after they had been abolished.

J. D. ROLLESTON.

**THE PATHOLOGY OF TABETIC OCULAR PALSY, WITH  
(339) REMARKS ON THE RELATION OF SYPHILIS TO THE  
SO-CALLED PARASYPHILITIC DISEASES. W. C. SPILLER,  
*Journ. Nerv. and Ment. Dis.*, 1915, xlii., Jan., p. 15.**

THE case is reported of a man who, in addition to presenting the other characteristic signs of tabes dorsalis, had a total internal and external ophthalmoplegia of both eyes with paralytic divergence. The iridic reaction was lost. The optic nerves were partially degenerated.

The autopsy showed the usual changes of tabes in the posterior lumbar roots and cord.

Each oculomotor nerve showed much lymphocytic infiltration and was greatly degenerated. The oculomotor nuclei were greatly atrophied and contained few nerve cells, and the oculomotor fibres within the cerebral peduncles were much fewer than normal. The Edinger-Westphal nuclei were much better preserved than the other portions of the oculomotor nuclei.

The troclear nuclei were atrophical, the left more than the right; this was also the case with the abducent nerves, the left being more atrophied, and showed more lymphocytic infiltration. The above findings, in regard to the abducent nucleus and nerve,

would seem to indicate that the syphilitic process was primarily in the nerve rather than the nucleus, and would make a distinction between the ocular palsies of tabes and syphilis unreliable.

Most other authors, who have paid attention to the pathology of ocular palsies in tabes and syphilis, have believed that tabetic palsies were usually of nuclear origin, while those of brain syphilis were usually from nerve degeneration. D. K. HENDERSON.

**NEW METHOD OF LUMBAR PUNCTURE IN THE LATERAL DECUBITUS ABOVE THE SPINAL LINE.** (Nouveau mode de ponction lombaire en décubitus latéral au-dessus de la ligne épineuse.) J. SABRAZÈS, *Gaz. hebdomadaire des Sciences Médicales de Bordeaux*, 1915, xxxvi., p. 3.

THE new method consists in inserting the needle not, as in the usual manner, below the spine of the vertebra, but above. The needle is driven from behind forwards, and from above downwards at an angle of 15°-20° to the horizontal, and with a slight obliquity from left to right. It thus reaches the ligamentum flavum, and then the meninges and subarachnoid cavity. Sabrazès has used this method in a very large number of cases, and found it harmless and relatively simple. The rapidity with which it can be carried out renders local anaesthesia unnecessary. This method can always be resorted to when others fail.

J. D. ROLLESTON.

**SPINAL DECOMPRESSION IN MENINGOMYELITIS.** A. S. (341) TAYLOR and J. W. STEPHENSON, *Journ. Nerv. and Ment. Dis.*, 1915, xlii., Jan., p. 1.

THE authors have had four cases in which operation was done, in three of which the results were strikingly satisfactory. These results raise the question whether in selected cases decompression will not only greatly shorten the period of invalidism, but also very considerably enhance the completeness of recovery.

A careful search of the literature since 1907 resulted in finding only one other case in which an operation was performed. This was done in 1909 by Krause, and the clinical history, the operative findings, and the principles of operative treatment were nearly identical with those in the series reported.

In each case the onset was in the form of severe neuralgic root pains referred to a fairly definite cord level. In three cases motor disturbances, loss of sphincter control, and the other

phenomena indicative of a transverse lesion of the cord were present; in the fourth case there were no motor or sphincter disabilities.

In each case the cord was exposed by a unilateral laminectomy. The cord was very much congested and was obviously swollen, but not sufficiently to fill out the dural canal.

In case 1, operation had no effect, and death occurred on the twenty-fourth day after operation.

In the remainder of the series the improvement was prompt and remarkable. Within four to eleven days the pains and objective sensory disturbances had largely disappeared, and motor power and sphincter control returned.

The authors believe that decompression acts by causing an improvement in the local circulation with resulting more rapid absorption of the inflammatory infiltration, and return of function in the damaged areas of the cord.

D. K. HENDERSON.

#### **ENCEPHALITIS DUE TO THE INHALATION OF GASOLINE.**

(342) C. S. POTTS, *Journ. Nerv. and Ment. Dis.*, 1915, xlii., Jan., p. 24.

TRANSITORY toxic symptoms such as headache, nausea, delirium, and loss of consciousness due to the inhalation of the fumes of gasoline are not uncommon, but more permanent symptoms referable to the nervous system are relatively rare. Gasoline as sold contains a number of the different products of petrol distillation such as naphtha, benzine, and petroleum ether.

The case is reported of a white male, aged 45 years, who was admitted to the hospital in an unconscious condition. His occupation had been that of filling the tanks of automobiles with gasoline, and while at work he had fallen over unconscious. Ten days after admission he was still quite stupid, but could be aroused. He had then a ptosis of the right eyelid, and the eyeball was drawn downward and to the right. The following day it was noted that he had a complete oculomotor palsy on the right side. On the left side the pupil responded to light, all movements of the eyeball were lost excepting inward rotation, and slight rotation outward. Associated movement of both eyes to the right was present. The angle of the mouth could not be drawn so well to the left as to the right, and the left arm and leg were much weaker than those on the right side. The knee jerk was more exaggerated on the left side, ankle clonus was present on the left side, and there was a tendency to dorsal flexion of the toes on the left. There was ataxia and asynergia of the left arm and left leg. The gait was of the cerebellar type, with a tendency to fall to the left. In the course of four months, a gradual improve-

ment took place, and when last seen the only symptoms remaining were impairment of the functions of the left oculomotor nerve, ataxia of the left arm, and possibly weakness of the left leg.

It was thought that a lesion in the region of the aqueduct of Sylvius would explain the symptoms. D. K. HENDERSON.

**SERO-PURULENT MENINGOCOCCAL EFFUSION IN A POP-  
(343) LITEAL BURSA FOLLOWING CEREBRO-SPINAL MEN-  
INGITIS WITH ARTICULAR COMPLICATIONS.** (*Epanche-  
ment séro-purulent à méningocoques dans une bourse séreuse  
poplitée, au déclin d'une méningite cérébro-spinale suivie de  
déterminations polyarticulaires.*) J. SABRAZÈS and C. COLBERT,  
*Gaz. hebd. des Sci. Méd. de Bordeaux*, 1915, xxxvi., p. 27.

A CASE in a man, aged 40, successfully treated by local injections of anti-meningococcal serum. No previous case has been recorded of an effusion into a popliteal bursa due to meningococcal infection. The meningococcus was found in the fluid removed from the bursa.

J. D. ROLLESTON.

**ARTICULAR MANIFESTATIONS IN CEREBRO-SPINAL MENIN-  
(344) GITIS.** (*Manifestations articulaires dans la méningite cérébro-  
spinale.*) P. LAFOSSE, *Bull. et mém. Soc. méd. Hôp. de Paris*,  
1915, xxxix., p. 299.

A RECORD of five cases of meningococcal arthritis in soldiers aged from 19 to 42. The knees were principally affected. In two cases the arthritis preceded the symptoms of meningitis. In only one case did suppuration occur, and this was the only one in which the joint was punctured, and the fluid examined. No micro-organisms were found. In one case the arthritis appeared fourteen days after the onset of the disease, but its rapid disappearance after injection of 5 c.c. of antimeningococcal serum showed that it was probably a result of meningococcal infection. In all but one case, which was injected too late, serum treatment had a good effect.

J. D. ROLLESTON.

**A CASE OF LANDRY'S PARALYSIS.** J. S. B. STOPFORD, *Lancet*,  
(345) 1915, clxxxviii., June 5, p. 1172.

A MAN, aged 18, athletic, who had never suffered from any illness since childhood, suddenly noticed that his left leg gave way while walking. He rapidly became so weak that he had to be helped home and put to bed. Next morning the hand-grasp on both sides was weak, and retention of urine set in, followed by difficulty in breathing and inability to move the fingers. The

retention of urine passed away, but breathing became purely diaphragmatic, and death occurred from asphyxia five and a half days after the original onset.

An examination of the cord showed little change apart from swelling of the nerve cells, absence of Nissl granules, and excentric nuclei. These changes were found in the cells of the anterior and posterior horns and Clarke's column. There was no proliferation of neuroglia nor cellular infiltration of the grey matter or meninges. The vessels in both the white and grey matter were distended with blood, but no hæmorrhages nor perivascular infiltration were seen.

Landry's original paper upon this subject was published in 1859. The author thinks there is good reason to suppose that there is a distinct morbid condition causing a train of symptoms similar to those described by Landry, and worthy of the name, "Landry's paralysis," and that there is no advantage in retaining the alternative name, "acute ascending paralysis."

A. NINIAN BRUCE.

**A CASE OF THE ATONIC FORM OF CEREBRAL DIPLEGIA.**

(346) E. G. FEARNSIDES, *Brit. Journ. Child. Dis.*, 1915, xii., p. 166.

FEARNSIDES refers to the recent paper by Batten and von Wyss (*v. Review*, 1915, xii., p. 170) and records a personal case in a boy born in April 1910. In December 1912 he appeared to be a characteristic example of amyotonia congenita, as all the muscles were hypotonic and no tendon reflexes could be elicited. Since then he had improved considerably, and in February 1915 the knee jerks were exaggerated and the ankle jerks could be obtained. In active movements of the extremities power was little impaired, but there was gross clumsiness and ataxy. The child, though backward, could not be described as mentally deficient, and would seem to belong to Pierce Clark's group of cases of cerebro-cerebellar diplegia.

J. D. ROLLESTON.

**THE DIFFERENT FORMS OF DISSEMINATED SCLEROSIS. (Der**

(347) *Formenreichtum der multiplen Sklerose.*) H. OPPENHEIM, *Deut. Ztschr. f. Nervenheilk.*, 1915, lii., S. 169-239.

THERE are very few diseases of the nervous system which may not be simulated by disseminated sclerosis.

It may be classified in several different ways, *e.g.*, according to the clinical course of the disease into an acute, a sub-acute, a chronic, and a recurrent form. It is, however, more common to classify it according to the part of the nervous system affected,

and although too sharp a distinction cannot be drawn, three forms may be distinguished, namely, a cerebral, a spinal, and a cerebro-spinal form.

The spinal form may be subdivided into four types—(a) dorsal, (b) cervical, (c) lumbo-sacral and sacral, and (d) mixed, while from the point of view of symptoms six types may be recognised—(1) lateral column or spastic paraplegic type, (2) posterior column type or sclerotic pseudo-tabes, (3) combined lateral and posterior column type producing corresponding symptoms, (4) anterior horn type or pseudo-polio-myelitis, (5) combined anterior and posterior horn type or pseudo-syringomyelia, (6) combined anterior horn and lateral column type or sclerotic pseudoform of amyotrophic lateral sclerosis.

The cerebral form may be subdivided into the following forms—(1) psychic, (2) hemiplegic, (3) pseudo-bulbar, (4) cortical epileptic, (5) tumour-like, (6) pontine or bulbar, (7) cerebellar, and (8) ocular.

Cases illustrating all these different types are described at some length, and show in what an extraordinary variety of forms this disease may exhibit itself clinically. A. NINIAN BRUCE.

**TUMOUR OF THE THIRD VENTRICLE.** LEWIS J. POLLOCK, *Journ.* (348) *Amer. Med. Assoc.*, 1915, lxiv., June 5, p. 1903.

WEISENBURG has collected from the literature thirty cases of tumour of the third ventricle (*v. Review*, 1911, ix., p. 85), and distinguishes three symptomatic groups:—

1. Those in which a tumour of moderate size is situated in the floor of the third ventricle, and in which there is no extension into the foramen of Monro or aqueduct of Sylvius. This class does not show specific symptoms, but presents evidence of internal hydrocephalus, namely headache, optic neuritis, nausea, vomiting, and dizziness. If the tumour be of large size indirect pressure on the internal capsule may cause paresis of the limbs. Mott attributes the mental symptoms to impairment of function of the cortex from pressure of the dilated ventricles.

2. Small tumours so situated as to obstruct the foramen of Monro and whose position can be changed by deviation of the head. Only one case has been observed and the symptoms were headache, nausea, and impairment of vision on tilting the head forward.

3. Tumours, either large or small, extending into the aqueduct of Sylvius and affecting the surrounding structures by direct extension or pressure, or those in which the posterior portions of the cerebral peduncles and pons are compressed, either by



direct pressure or by dilatation of the aqueduct of Sylvius. Such tumours cause a well recognisable syndrome, consisting of symptoms arising from involvement of the third nuclei, red nucleus, or superior cerebellar peduncles, and from pressure on the posterior longitudinal bundle or the intercommunicating fibres between the third nuclei. The symptoms are disturbance of associated ocular movements, oculomotor palsies, large pupils with impaired reaction, protrusion of the eyeballs, cerebellar ataxia, and the general symptoms of cerebral tumour.

A case is described in a woman, aged 48, who showed signs of "extreme mental dilapidation" without any localising signs. An encysted colloid growth was found situated in the third ventricle and probably originating from the ependyma. Microscopically it proved to be an encapsulated colloid cyst originating from a glioma.

A. NINIAN BRUCE.

**REPORT OF SEVEN CASES OF BRAIN TUMOUR (WITH (349) AUTOPSIES), WITH ESPECIAL REFERENCE TO DIFFERENTIAL DIAGNOSIS.** S. P. GOODHART and H. CLIMENKO, *Journ. Nerv. and Ment. Dis.*, 1915, xlii., April, p. 193.

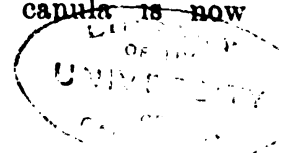
THE paper is a very general one, emphasising the importance of paying more attention to the type of make-up of the individual, and the absolute necessity of not overlooking the very earliest manifestations of organic disease of the brain.

The seven cases reported have been carefully investigated and analysed, in the light of the autopsy findings, as to the sources of error.

D. K. HENDERSON.

**PUNCTURE OF THE CORPUS CALLOSUM, WITH SPECIAL (350) REFERENCE TO ITS VALUE AS A DECOMPRESSIVE MEASURE.** CHARLES A. ELSBERG, *Journ. Nerv. and Ment. Dis.*, 1915, xlii., March, p. 140.

IN 75 per cent. of cases (372 out of 500 cases) in which a new growth is found at operation or autopsy, there is more or less distension of the ventricles. Anton and von Brahmman (*v. p. 304*) were the first to devise a simple method for the making of a permanent communication between the ventricles and the subdural space over the cerebral convexities, by means of puncture of the corpus callosum. A small incision is made at right angles to the median line beginning 1 or 2 cm. away from the median line, and 1 or 2 cm. behind the coronary suture. With a trephine a button of bone is removed, and a small incision made in the dura. A small bent cannula is now



introduced through the dura, and pushed towards the median line, until the resistance of the falx cerebri is felt. The blunt point of the canula is now slid along the falx, and the corpus callosum is perforated near the genu, and fluid escapes from the ventricle.

After the canula is withdrawn, the dura is closed by one fine silk suture, and the skin wound closed. On account of the higher pressure in the ventricles than in the subdural space, fluid continually passes from the ventricles to the subdural space over the convexity of the hemispheres, and the opening in the corpus callosum therefore remains patent.

The results obtained by Anton and von Brahmman were exceedingly satisfactory.

The author has now performed puncture of the corpus callosum thirty-seven times. The operation has never been difficult, and all the patients recovered without any bad after-effects. In cases of non-obstructive internal hydrocephalus puncture of the corpus callosum is the best method of dealing with the condition. In many instances also it is the best palliative operation in irremovable cerebral and cerebellar neoplasms.

One of the great advantages of this method is the absence of a deforming hernia in the subtemporal or suboccipital region.

D. K. HENDERSON.

**PULMONARY COMPLICATIONS OF APOPLEXY.** PHILIP COOMBS  
(351) KNAPP, *Journ. Nerv. and Ment. Dis.*, 1915, xlii., March, p. 150.

A BRIEF report on the frequency of pulmonary complications in apoplexy, and a short discussion of the best methods of treatment.

D. K. HENDERSON.

**PROGRESSIVE VAGUS - GLOSSOPHARYNGEAL PARALYSIS**  
(352) **WITH PTOSIS.** (A contribution to the group of family diseases.)  
E. W. TAYLOR, *Journ. Nerv. and Ment. Dis.*, 1915, xlii., March, p. 129.

A FRENCH - CANADIAN woman, 59 years, had for two years experienced considerable difficulty in swallowing. A laryngological examination showed that both the pharynx and the larynx were normal, and that a bougie could be passed into the stomach without resistance. On examination it was found that she had a bilateral ptosis, which she stated had gradually been coming on over a period of four years. There was no difficulty in breathing, or phonating, and there was no atrophy of the tongue, but there was pronounced difficulty in swallowing, particularly solid

food. The rest of the neurological examination was entirely negative.

The family history showed that the patient's mother, two brothers, and one sister all suffered from the same combination of symptoms, and eventually died from starvation at the ages of 77, 67, 68, and 68 respectively.

It is a tradition in the family, which has been amply borne out by the facts so far observed, that the disease never begins before the fiftieth year.

The peculiarity of the affection lies in the fact, that although very chronic in course, no other nerves are involved, thus differentiating it sharply from an ordinary type of bulbar or pseudo-bulbar paralysis.

The author has been unable to find any reference, in the literature of the family hereditary affections, to this disturbance. He feels justified in regarding it as a distinct entity, as it occurs in precisely the same form in all persons affected, and also invariably in the declining years of life.

D. K. HENDERSON.

**UNILATERAL HYPERTROPHY OR TROPHEDEMA OF LIMBS.**

(353) (Report of a Case.) H. T. PERSHING, *Journ. Nerv. and Ment. Dis.*, 1915, xlii., Feb., p. 65.

THE patient's mother had suffered from Raynaud's disease, a brother of the patient had migraine in childhood, and a younger sister suffers from constant backache. At the age of 3 years the patient had a severe illness, supposed to be typhoid fever; it was following her recovery that the left limbs were noted for the first time as smaller than the right, and they were specially exercised to bring their development up to the supposedly normal right ones. She suffered from typical recurring attacks of migraine.

The writer was first consulted in 1913, when the patient was 19 years old.

The hair of the head was scant and dry, the voice was low-pitched, and on exertion she tired easily. Her mental development had been entirely normal.

No neurological symptoms could be detected and there was no abnormality of the thyroid gland.

In girth the right leg and right arm were much thicker than the left, but there was practically no difference in the length of the limbs on the right and left sides.

The case is held to be closely related to the hereditary œdema of Milroy, although sharply contrasted in affecting only one member of the family.

D. K. HENDERSON.

**ANGIOMA RACEMOSA OF THE PIA, with Epileptoid Convulsions**  
(354) **of the Jacksonian Type.** THOMAS J. ORBISON, *Journ. Amer. Med. Assoc.*, 1915, lxiv., May 8, p. 1575.

A MAN, aged 30, married, developed spasmodic movements of his right arm. These recurred every few months and developed into general convulsions with unconsciousness. As these convulsive seizures were becoming so frequent as to totally incapacitate him for his work, and as they were accompanied by headache, vomiting, and mental incapacity, he was trephined over the arm centre on the left side of the skull. When the dura was opened, two loops of engorged and tortuous blood vessels were found. They were ligated and excised. No other source of irritation was found. The patient died two days later and at the autopsy a mass of enlarged and engorged blood vessels, filled with old blood, were found at the apex of the left cerebral hemisphere together with evidence of old inflammatory adhesions between dura and pia. These had, however, caused no symptoms. A. NINIAN BRUCE.

**THE HEREDITARY TRANSMISSION OF EPILEPSY.** M. ABDY  
(355) COLLINS, *Journ. Ment. Sci.*, 1915, lxi., Jan., p. 91.

DR COLLINS deals with this subject from two points of view: (1) The defects found in the ancestors of his patients, and (2) the presence of epilepsy in the descendants. The author points out that adolescent or ordinary epilepsy presents the lowest percentage of epileptic heredity. Some interesting remarks are made with regard to parental alcoholism, and also with regard to epilepsy.  
GEORGE R. JEFFREY.

**SYPHILIS AND EARLY OPTIC NEURITIS.** (*Syfilis, tidlig neuritis optica.*) C. RASCH, *Hospitalstidende*, 1915, lviii., p. 420.

A MAN, aged 23, was admitted to hospital on 29th October with four excoriated indurated ulcers on the penis, inguinal adenitis, and a positive Wassermann's reaction, but no eruption. He had not been treated either with mercury or salvarsan. There was well-developed optic neuritis. He was ordered mercurial inunction and perchloride internally. The spinal fluid was normal. On 2nd November he developed the usual type of early syphilitic eruption.

Optic neuritis coexisting with the eruption is not uncommon, but Rasch had never seen a case before in which the neuritis preceded the eruption.  
J. D. ROLLESTON.

**ON SYPHILITIC POLYNEURITIS.** (*Zur Kenntnis der Polyneuritis* (357) *sypilitica*.) A. PINCZOWER, *Dermat. Centralbl.*, 1915, xviii., p. 82.

THE writer refers to the cases of Bonnet and Laurent (*v. Review*, 1911, ix., p. 25), Hoffmann (*ibid.*, 1912, x., p. 494) and others, and records a personal case in a man, aged 43, who developed polyneuritis of the sciatic nerves and brachial and lumbar plexuses four years after the chancre. The patient was suffering from cutaneous gummata, for which he was given an intravenous injection of 0.3 neosalvarsan. The writer excludes the idea of arsenical poisoning, as the patient had previously had two much stronger injections of neosalvarsan without ill effect.

J. D. ROLLESTON.

**SYPHILITIC SPONDYLITIS.** (*Spondylitis luica*.) JACOBSON, *Hospi-talstidende*, 1915, lviii., p. 446.

A MAN, aged 49, who had had kyphosis of the upper half of the dorsal column since the age of 13, but had suffered no inconvenience from it hitherto, began to develop paraparesis with slight ataxia, brisk knee jerks, left ankle clonus, and Babinski's sign, hypoesthesia of the left leg and corresponding side of the abdomen. Everything seemed to indicate a recrudescence of the vertebral tuberculosis with symptoms of compression. In spite of a negative history, Wassermann's reaction was positive, and improvement rapidly took place under antisypilitic treatment. The kyphosis was probably of syphilitic origin, but the manner of infection was obscure.

J. D. ROLLESTON.

**REMARKS ON THE INTRACRANIAL INJECTION OF SAL-VARSANISED SERUM.** G. H. MONRAD-KROHN, *Journ. Ment. Sci.*, 1915, lxi., April, p. 250.

DR MONRAD-KROHN refers to the controversy as to whether the subdural and subarachnoid spaces communicate, and states that his injections were partly subdural and partly subarachnoid. Owing to the deficient state of our knowledge, he is of opinion that the only clinical way in which we can estimate the value of the various methods of intracranial injections is by comparing large groups of cases (*a*) which have not received any treatment at all, (*b*) which have been treated with intravenous salvarsan only, and (*c*) which in addition have had administered intracranial injection, these cases subsequently being subjected to a thorough investigation mentally and physically. The author warns us not to be too sanguine as to the results of salvarsanised serum, as even if the spirochaetes are killed, additional neurons cannot replace those destroyed. What we may mainly expect is an arrest in the course of the disease.

E. G. GROVE.

**PEMPHIGUS VEGETANS. HEMIPLEGIA AFTER SALVARSAN**  
 (360) **TREATMENT ABROAD.** (*Pemphigus vegetans. Hemiplegi*  
*efter Salvarsanbehandling i Udlandet.*) C. RASCH, *Hospital-*  
*stidende*, 1915, lviii., p. 420.

THE modern treatment in Germany for pemphigus vegetans with salvarsan may be both useless and dangerous, as is shown by the following case:—a woman, aged 55, received two intravenous injections of salvarsan for pemphigus vegetans at five days' interval. Immediately after the last injection she developed left hemiplegia and blindness in the right eye. The pemphigus became much more extensive and the general condition, hitherto good, deteriorated.  
 J. D. ROLLESTON.

**THE LUTIN TEST IN PARASYPHILIS.** D. M. ROSS, *Journ. Ment.*  
 (361) *Sci.*, 1915, lxi., April, p. 244.

DR ROSS gives the results of injections of luetin used on 16 cases, which consisted of 12 general paralysis, 2 cerebro-spinal syphilis, and of the remaining 2, 1 was found probably not to have had syphilis, whilst the other, from signs and symptoms, was suggestive of general paralysis and syphilitic infection. Nine, or 75 per cent., general paralytics gave positive reaction; both cerebro-spinal syphilitics and the suggestive case were positive. Wassermann reaction of the cerebro-spinal fluid was positive in all the cases with the exception of the probable non-specific case. The writer pleads, as points in favour of the use of the luetin test, that (a) it is easily employed, (b) absolutely specific for the disease, (c) occasionally positive when the Wassermann is negative. Finally, in comparing the two tests he quotes Much, who states that when it is a question of ascertaining if the patient has ever been infected with syphilis, the luetin test is the more instructive, but when it is desired to know if the disease is still active, the Wassermann is the more helpful.  
 E. G. GROVE.

**ON NEURASTHENIC SYNDROMES IN SYPHILIS AND**  
 (362) **SYPHILITIC SYNDROMES IN NEURASTHENIA.** (*Sulle*  
*sindromi neurasteniche nei luetici e sulle sindromi luetiche nei*  
*neurastenici.*) G. ARTOM, *Riv. di Patol. nerv. e ment.*, 1915, xx.,  
 p. 36.

PATIENTS are often subjected to antisyphilitic treatment when their symptoms are due to neurasthenia, and vice versa. Artom maintains that there is not such a thing as syphilitic neurasthenia, but that the two syndromes, syphilitic and neurasthenic, may coexist or alternate with one another.

Ten illustrative cases are recorded.

J. D. ROLLESTON.

**NEUROSES IN TRAMWAYMEN. (Le neurosi nei tramvieri.)**

(363) C. F. ZANELLI, *Riv. di Patol. nerv. e ment.*, 1914, xix., p. 25.

A RECORD of twenty cases in tramway drivers and conductors, with a study of the symptomatology, ætiology, prognosis, and treatment. The cerebral form of neurasthenia is most prevalent among men and this is followed in frequency and severity by disturbances of the cardiac innervation and of the sexual sphere, and lastly by digestive disorders.

The causes are classified as follows:—

1. Causes affecting the sensorium, such as loud and unpleasant noises, and the constant succession of objects before the eyes varying in form and colour, causing vertigo.

2. Mechanical causes, *e.g.*, continual vibration, repetition of the same movements, and the erect position.

3. Physical causes such as atmospheric factors and frequent slight electric shocks.

4. Physiological causes, *i.e.*, the necessity of prolonged resistance to physiological stimuli (eating, drinking, urination, and defæcation).

5. Psychological causes. The need of constant attention both on the part of drivers and conductors, and the worrying behaviour of passengers.

6. Overwork, due to long hours on duty.

The prognosis depends on the date of onset, the presence or absence of concomitant neuroses, the complexity of the symptoms and the mental state of the patient.

Treatment consists in the improvement of the conditions of the tramway service, the administration of tonics, and the removal of all intoxicants such as alcohol and tobacco.

J. D. ROLLESTON.

**THE DIAGNOSIS AND TREATMENT OF PARENCHYMATOUS**

(364) **SYPHILIS.** F. W. MOTT, *Journ. Ment. Sci.*, 1915, lxi., April, p. 175.

DR MOTT, as President of the Section of Neurology and Psychological Medicine, British Medical Association Annual Meeting, 1914, brings forward for discussion a subject of paramount importance under the above title. He has bestowed much care and labour on the microscopical and bio-chemical changes in general paralysis and tabes. By means of photographs, experimental observations, &c., of his own and others he describes the results obtained and their significance.

He classifies his subject under the following headings:—

Discovery of spirochætes in the brain.

Existence of spirochætes in the central nervous system in relation to the pathology of parenchymatous syphilis.

Experimental observations.

Evidence of spirochaetes in parenchyma of the central nervous system in relation to the morbid histological changes.

The biological nature of *Spirochæta pallida*.

The microscopic changes in the cortex of the brain in relation to spirochætal colonisation.

The spirochaetes in relation to the cerebro-spinal irrigation of the brain.

The production of specific antibodies in relation to remissions.

Experiments on animals in relation to the therapeutic action of mercury and arsenic compounds.

*Diagnosis.*—With reference to diagnosis the Wassermann reaction is dealt with both as to blood and cerebro-spinal fluid. He states that a positive reaction of the blood may occur in persons not infected with syphilis, whereas a positive reaction of the cerebro-spinal fluid is undoubted proof of the presence of the spirochæte or its toxin in the central nervous system. He quotes 98·4 per cent. of accurate results of all cases, and 98·1 per cent. positive reactions in cases of general paralysis. With 300 asylum cases the Wassermann test of the serum gave positive results in 98 to 99 per cent. From this he concludes that a positive reaction with the serum is almost a constant feature.

*Treatment.*—When discussing the question of treatment he states: "I have come to the conclusion that these late degenerative forms of syphilis of the nervous system (and I refer especially to general paralysis) have not been cured, nor even greatly benefited, by any treatment with salvarsan or neosalvarsan, whether administered intravenously or intrathecally." He adds that the incidence of general paralysis in a population may be looked upon as a measure of the incidence of syphilis.

E. G. GROVE.

#### CONCERNING LANDAU'S COLOR TEST FOR SERODIAGNOSIS

(365) **OF SYPHILIS.** JOHN A. COLMAR, *Journ. Amer. Med. Assoc.*, 1915, lxiv., May 1, p. 1461.

#### A FURTHER NOTE ON LANDAU'S COLOR TEST FOR

(366) **SYPHILIS.** JOHN A. COLMAR, *Ibid.*, June 2, p. 1966.

To sum up, the iodine colour test, as conducted with correct technique, was found to have no practical value in the serodiagnosis of syphilis, because of its irregular results as shown by the low percentage of correct positive reactions with Wassermann positive serums, and more especially by reason of the high percentage of false positive reactions with Wassermann negative serums.

A. NINIAN BRUCE.



**THE LANDAU IODIN SERUM TEST FOR SYPHILIS.** ARTHUR (367) W. STILLIANS, *Journ. Amer. Med. Assoc.*, 1915, lxiv., June 12, p. 1964.

LANDAU'S new serum test for syphilis consists in dissolving 1 per cent. of iodine in carbon tetrachloride and shaking 0.1 c.c. of this solution with 0.2 c.c. of the serum to be tested. If after standing for four hours the serum above the decolorised reagent is a clear yellow, the reaction is positive, if the serum is greyish-white, the reaction is negative. Landau stated that in a series of 122 cases he only obtained one result which did not agree with the clinical diagnosis.

The author finds that the test is positive in a large number of nonsyphilitics, and negative in many syphilitics. In fact no definite relation exists between the Landau serum reaction and syphilis.

A. NINIAN BRUCE.

**SCIATICA A SYMPTOM OF APPENDICITIS.** B. M. RANDOLPH, (368) *Journ. Amer. Med. Assoc.*, 1915, lxiv., Feb. 13, p. 579.

A MAN, aged 48, was confined to bed with fever suffering from "sciatic rheumatism." Since then his health had been poor, and an acute abdominal attack developed, which was diagnosed as appendicitis. The appendix was removed, and was found to be lying close to the upper division of the lumbosacral cord. An abscess was present at the tip, and evidently the initial attack of sciatic rheumatism was in reality an attack of acute appendicitis, with peripheral pain in the sciatic nerve, due to the proximity of the inflammatory focus to its fibres of origin.

A. NINIAN BRUCE.

**THE TREATMENT OF PELLAGRA BY AUTOSEROTHERAPY.** (369) ERNEST E. PALMER and WILLIAM LEE SECOR, *Journ. Amer. Med. Assoc.*, 1915, lxiv., May 8, p. 1566.

THE technique consisted in applying a piece of cantharides plaster 1½ in. square, and smeared with olive oil, over the chest. The fluid from the blister is withdrawn next morning and injected into the patient's arm. Improvement resulted in seven cases in which this treatment was tried.

A. NINIAN BRUCE.

**LUCIAN AND MEDICINE.** J. D. ROLLESTON, *Proc. Roy. Soc. Med.*, (370) 1915, viii. (Section of History of Med.), pp. 48-58 and 72-84, and *Janus*, 1915, xx., pp. 83-108.

In the first part of this paper the writer deals with Lucian's references to medical men either as individuals or as a class,

and in the second part discusses the numerous other medical allusions in Lucian's writings. The paper may be summarised as follows:—

1. Numerous passages in Lucian show that the medical profession during the second century A.D. enjoyed a high reputation.

2. In addition to regular practitioners, however, charlatans drove a flourishing trade. Superstition, especially in therapeutics, was rife, and of this amusing examples are given both in "Philopseudes" and "Alexander."

3. The worship of Asklepius was still in force, but Lucian's satire did not spare him any more than the other inhabitants of Olympus.

4. The pictures of social life contain many allusions to prevalent diseases, especially pneumonia, consumption, alcoholism, gout, and fevers, which latter includes malaria, typhus, typhoid, Malta fever, and a curious epidemic at Abdera in Thrace resembling the "dancing mania" of the Middle Ages, and references to other subjects of medical interest, such as physical exercises, baths, cosmetics, and longevity.

5. There is no evidence suggestive of syphilis in Lucian in spite of the large erotic element in his works (*cf. Review*, 1914, xii., p. 325).

AUTHOR'S ABSTRACT.

## PSYCHIATRY.

**THE OCULO-RESPIRATORY REFLEX IN THE INSANE** (II  
(371) *riflesso oculo-respiratorio negli alienati di mente*.) E. AGUGLIA,  
*Riv. Ital. di Neurop., Psichiatria ed Elettrotec.*, 1915, viii., p. 57.

THE technique is the same as for the oculo-cardiac reflex. Place the patient in the recumbent position with his head on a somewhat resistant plane, count the respirations for thirty seconds or a minute, and then with the right thumb and index gently compress the eyeballs through the closed eyelids, and count the respirations for at least thirty seconds, paying attention to the amplitude of the respiratory movements. Examination of normal individuals shows that in about two-thirds there is a diminution of not more than two or three respirations during the first minute, and that there is sometimes a diminution in the amplitude of the thoracico-abdominal excursions, especially in women. Isolated compression of the right eyeball usually causes more marked slowing than compression of the left, owing to the greater excitability of the right vagus. The arc of the oculo-respiratory reflex is the same as that of the oculo-cardiac reflex, viz.: (1) a centripetal path, the fifth nerve; (2) a centre, the medulla; (3) a centrifugal path,

the vagus. As in the case of the oculo-cardiac reflex, the response may take place by the sympathetic, and there is then not a diminution but an increase in the respiratory movements. Aguglia has examined the oculo-respiratory reflex in seventy-two insane patients—thirty-four men and thirty-eight women, including cases of idiocy, imbecility, senile dementia, dementia præcox, manic-depressive insanity, general paralysis, melancholic states, alcoholic insanity, paranoia, hysteria, and epilepsy. He had previously examined the oculo-cardiac reflex in the insane, and the following table shows the results of a comparative study of the two reflexes:—

#### OCULO-CARDIAC REFLEX.

1. There is no difference between the two sexes as regards the behaviour of the oculo-cardiac reflex.

2. In 60·8 per cent. of the insane examined there was a marked exaggeration of the reflex.

3. Exaggeration of the reflex is almost always related to the gravity of the mental condition of the patient.

4. In syphilitic subjects, whatever the form and gravity of the mental disease, there is always abolition and inversion of the reflex.

5. In phrenasthenics there is generally a marked vagotonic state (exaggeration of the reflex).

6. In general paralysis, contrary to what is stated by some writers, Aguglia has always found an *abolition* of the oculo-cardiac reflex, a condition analogous to that found in the syphilitic insane.

#### OCULO-RESPIRATORY REFLEX.

1. Exaggeration of the oculo-respiratory reflex and diminution of the thoracico-abdominal excursions are more marked and frequent in women than in men.

2. In two-fifths of the insane examined ocular compression causes exaggerated slowing of respiration.

3. Exaggeration of the reflex is often related to the gravity of the mental condition of the patient, but this is less evident and constant than in the case of the oculo-cardiac reflex.

4. In syphilitic patients, whatever the form and gravity of the mental disease, inversion of the reflex is constant, and the same occurs in syphilitic patients not affected with mental or nervous diseases.

5. In phrenasthenic men, and still more so in phrenasthenic women, there is often a marked vagotonic state, but the phenomenon is less marked and constant than in the case of the oculo-cardiac reflex.

6. In general paralysis Aguglia has always found *inversion* of the oculo-respiratory reflex, a condition analogous to that found in the syphilitic insane.

## OCULO-CARDIAC REFLEX.

7. In melancholic states, in addition to slowing of the pulse during ocular compression, a fall of blood pressure becomes obvious.

8. The oculo-cardiac reflex may serve to differentiate a senile or alcoholic tremor from the tremor of paralysis agitans, since in paralysis agitans the reflex is abolished while it is preserved in alcoholic and senile tremors.

9. In epileptics the reflex is almost always exaggerated, and this exaggeration is related to the gravity of the disease. There is also a marked fall of blood pressure.

Aguglia concludes that, while the data derived from the two reflexes complete one another, the data furnished by the oculo-cardiac reflex are more valuable, both from the standpoint of physiology and from that of clinical medicine and therapeutics.

J. D. ROLLESTON.

## OCULO-RESPIRATORY REFLEX.

7. In a melancholic woman during ocular compression diminution of the thoracico-abdominal excursions occurred.

8. No data available.

9. In epileptics all possible combinations are met with in the behaviour of the reflex. On suspension of bromide a certain regularity in the behaviour of the reflex takes place.

**ON THE DIAGNOSTIC VALUE OF HALLUCINATIONS BASED  
(372) ON A STUDY OF 500 CASES OF MENTAL DISEASES.**

A. W. STEARNS, *Journ. Nerv. and Ment. Dis.*, 1915, xlii., Jan., p. 28.

THIS study has been undertaken with the hope that the occurrence and type of hallucinations might be made of some differential value in diagnosis.

The group of cases was taken in alphabetical order to see, first, how many had hallucinations; next, whether they were of hearing, vision, or other type; and lastly, to determine whether there were any which seemed especially characteristic of any form of disease.

The following conclusions were arrived at:—

1. The presence of hallucinations is indispensable for the diagnosis of alcoholic hallucinosis or delirium tremens, but the type of hallucinations is not a proper criterion for differentiation between these diseases.

2. The frequency of hallucinations in dementia præcox and their rarity in manic-depressive insanity has a bearing on differential diagnosis.

3. There are some grounds for doubting the existence of true hallucinations in manic-depressive insanity.

4. Hallucinations seem to be rare in some persons, even though they be psychopaths.

D. K. HENDERSON.

**THE POSITION OF PSYCHIATRY, AND THE RÔLE OF GENERAL HOSPITALS IN ITS IMPROVEMENT.** C. HUBERT BOND, *Journ. Ment. Sci.*, 1915, lxi., Jan., p. 1.

THIS was the subject of Dr Bond's introductory address at the opening of the winter session 1914-15 at the Middlesex Hospital. Dr Bond deals with this very important subject under three headings, viz.: (1) The present position in which psychiatry stands; (2) The essential cause of this position; (3) The benefit to psychiatry derived from general hospitals. The author discusses many points in connection with the asylum service and psychiatry, and his remarks should do much to encourage those who have entered the service. It is to be hoped that this paper will find its way, not only to all asylum medical officers, but also to those members of public bodies who have to do with the management of asylums and hospitals, for much has yet to be done to acquaint the public of the many claims of psychiatry as a highly important branch of medicine.

GEORGE R. JEFFREY.

**DRUG ADDICTION IN RELATION TO MENTAL DISORDER.** (374) ROBERT ARMSTRONG JONES, *Journ. Ment. Sci.*, 1915, lxi., Jan., p. 37.

THIS paper is based on an experience of forty-one cases of the drug habit, forty of whom became insane and were certified. An opium derivative was found to be the drug most frequently taken. The largest amount of morphia taken was 50 gr. per diem of the acetate, and one case took 4 oz. of laudanum daily.

In over 70 per cent. of the cases there was found a family history of insanity, of epilepsy, or of paralysis, or an inheritance of phthisis or cancer, showing the neurotic tendency of the drug victims.

The prognosis was found to be favourable; twenty-two cases recovered, and two improved. The general symptoms of drug taking are noted, and Dr Jones then discusses the relation of the drug habit to insanity. Amongst his conclusions Dr Jones states that "drugs and the habit of drug taking are the cause of insanity, and are a public danger"; that "the restriction of the sale of dangerous drugs is urgently needed in the public interest."

GEORGE R. JEFFREY.

**FRIEDRICH NIETZSCHE.** HUBERT J. NORMAN, *Journ. Ment. Sci.*, 1915, (375) lxi., Jan., p. 64.

THIS exhaustive article deals with the parentage, history, and mental state of Friedrich Nietzsche, and is full of most interesting reading.

GEORGE R. JEFFREY.

**SOME CONSIDERATIONS REGARDING THE FAMILY HISTORY  
(376) OF INSANITY IN THE HIGHLANDS. T. C. MACKENZIE,**  
*Journ. Ment. Sci.*, 1915, lxi., Jan., p. 95.

THIS paper contains some facts obtained from an investigation into the family history of 226 cases admitted into the Inverness District Asylum. Dr Mackenzie divides the cases into various groups, and finds that in one-third of the total number there had previously been relatives of the patient in the asylum; in one-fourth of the cases there were relatives of the patients who were defective or of unsound mind, but not certified; in one-eighth of the cases, relatives were present in the asylum when the patient was admitted, and in one-ninth of the cases relatives of the patient had died in the asylum.

The author suggests that in the general population there are certain strains, the members of which are specially prone to mental disease.  
GEORGE R. JEFFREY.

**CRIME, ALCOHOL, AND OTHER ALLIED CONDITIONS IN  
(377) STAFFORDSHIRE. W. HAMBLIN SMITH, *Journ. Ment. Sci.*,**  
1915, lxi., Jan., p. 98.

THE author of this paper discusses the relation between alcohol and criminality, and gives statistics for the county of Stafford. After eliminating parts of the county, Dr Smith divides the remaining district, with nearly a million inhabitants, into various areas, each having special characteristics which differentiate them from one another. The "offences" are classified into alcoholic and non-alcoholic, and he compares the incidence of offences in different districts. Amongst his conclusions Dr Smith points out that alcohol is directly responsible for more than one-half of the male prison receptions, and for a much larger proportion of the female receptions, and that densely-populated areas give the highest proportion of alcoholic offences.  
GEORGE R. JEFFREY.

**A CASE OF RECURRENT PURPURAL ERUPTION. J. O'C.**  
**(378) DONELAN, *Journ. Ment. Sci.*, 1915, lxi., Jan., p. 109.**

THIS patient was the subject of several attacks of insanity, and during his last admission to the Richmond Asylum he developed an interesting purpuric condition—a state which disappeared when the patient was put to bed, but reappeared immediately on getting up. The blood was not found to be abnormal, and vaso-motor paralysis was suggested as a cause.

GEORGE R. JEFFREY.

**WILLIAM BLAKE.** H. J. NORMAN, *Journ. Ment. Sci.*, 1915, lxi, April, (379) p. 198.

THE author of this article has evidently spent much time and research to render himself fully acquainted with the life of William Blake. The youthful instability, followed by hallucinations and disorders of conduct as gleaned from the evidence of the friends and opponents of this poet and painter, coupled with portions of Blake's own works, prove that he is undoubtedly to be classed as a case of maniac depressive insanity.

E. G. GROVE.

**COMBINED PSYCHOSES.** JOHN E. LIND, *Journ. Nerv. and Ment. Dis.*, (380) 1915, xlii., April, p. 217.

IN investigating the records of the Government Hospital for the Insane at Washington, 41 out of 808 cases showed a combined psychosis. The most common combination appeared to be an alcoholic psychosis in persons with the so-called dementia præcox make-up. It may be doubted whether there are in reality alcoholic psychoses or whether they are not simply episodes of a dementia præcox nature precipitated by alcohol.

D. K. HENDERSON.

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## Reviews

**THE FUNCTIONAL AND ANATOMICAL FINDINGS IN THE (381) BRAIN OF THE JAPANESE DANCING MOUSE.** (*Die funktionellen und hirnanatomischen Befunde bei der Japanischen Tanzmaus.*) TACO KUIPER. Pp. 157. Plates xlv., with 93 figs. in separate cover. W. J. van Hengel, Rotterdam, 1913.

THIS monograph consists of the description of an investigation of the brain of the Japanese dancing mouse, and is a remarkably clear and complete study of this interesting little animal. It commences with full abstracts of some of the principal papers which have previously been published on the subject, and then proceeds to describe the author's own work. This was carried out mostly upon six dancing mice. These exhibited considerable difference in the frequency, rapidity and type of their movements, as well as in their general liveliness and strength. The movements themselves varied greatly, and are tabulated at length; in some they gave the impression of being forced, in others rotary and stationary, in others of a "riding-school" type, in others of a

whirling nature, and in still others more suggestive of a dancing movement. The loss of muscular tone varied, and the animals all appeared to be deaf.

The anatomical findings are preceded by a description of the eighth root in the normal mouse, and the whole peripheral and central connections of the eighth nerve in the dancing mouse were subjected to detailed examination. The lesion was found to consist of a degeneration of the whole of the peripheral and central path of the eighth nerve, and to have begun in all probability during foetal life. The relationship between such a lesion and the peculiar symptoms which the Japanese dancing mice show, is then discussed, and the paper concludes with a bibliography of the previous literature.

The whole paper is a most interesting piece of work which has been carefully carried out, and reflects the greatest credit upon the author, on account of the minuteness with which the brains have been examined, the excellence of their illustrations, and the clearness with which the findings have been described and explained.

**DIAGNOSTIC SYMPTOMS IN NERVOUS DISEASES.** EDWARD (382) LIVINGSTON HUNT. Pp. 229, with 54 figs. W. D. Saunders Co., Philadelphia and London, 1914. Pr. 6s. 6d. net.

THE object of the author in producing this book was to provide a work which could be used by the student and the general practitioner both as a reference and as an aid in diagnosis, and in which "they could find the salient points and leading symptoms of the principal nervous diseases without the laborious search involved in consulting the larger text-books."

The first chapter is devoted to the proper examination of nervous cases. This may be divided into three parts:—First, taking the history; second, examining the patient; and third, correlating all the facts and diagnosing the case. The patient should be examined systematically for the following characteristics—(a) deformities, (b) paralysis, (c) tremors, (d) trophic disorders, (e) gait, (f) ataxia, (g) convulsions, (h) sensation, (i) reflexes, (j) abnormalities of the eye, (k) disturbances of speech, (l) aphasia, and (m) electric reactions. Each of these is described in a separate chapter. Certain of the chapters are very good, such as those upon tremors and upon gaits. The plan adopted has been to eliminate everything which is not absolutely essential, and to compress all the information into the smallest amount of space possible. As a consequence, the tendency has been to make use of tables or lists of diseases and to catalogue all symptoms



as much as possible, and while this introduces simplicity and allows the student to systematise his knowledge, it is here, unfortunately, carried too far, and the book has become too much of the nature of a "cram-book" for acquiring theoretical knowledge for examinations. We are told, for instance, to remember that irregularity, inequality, and immobility all begin with *I*, and all relate to symptoms of the *eye* in syphilis, and that we may remember that in the Argyll Robertson pupil the reflex to light is lost since the last two letters of the word *Argyll*—*LL*—mean loss of light.

**THE SCIENTIFIC WORKS OF DR J. BABINSKI.** (*Exposé des (383) travaux scientifiques du Dr J. Babinski.*) Masson et Cie, Paris, 1913.

THIS collection of the writings of Dr Babinski is one which will be welcomed by neurologists all over the world. It is divided into two parts. The first part comprises his researches on normal histology, physiology, and experimental pathology. The second part deals with clinical papers and pathological anatomy, and is subdivided into sections under the following headings—semiology, affections of muscles and nerves, of the spinal cord, of the meninges, of the brain and vestibular apparatus, of the glands of internal secretion, of the cardio-vascular apparatus and hysteria. Dr Babinski then gives a list of his published papers. His first work was published in October 1882, and from then to 1913 he has been responsible for 207 different papers. Most of these are clinical, and of great importance. Dr Babinski is to be congratulated on the publication of this volume.

**FEVER: ITS THERMOTAXIS AND METABOLISM.** ISAAC OTT. (384) Pp. 166, 14 figs. Paul B. Hoeber, New York, 1914. Pr. \$1.50 net.

THIS book consists of three chapters, which represent three lectures delivered by the author before the Sophomore class of the Medico-Chirurgical College. They are based upon forty-five years' study of the subject, regarded both from the clinical and from the physiological points of view.

The first lecture is concerned with *thermotaxis*, or heat regulation. "Thermotaxis depends upon four nervous centres—two basal thermogenic centres—the corpus striatum and the chief one, the tuber cinereum, and two inhibitory cerebral centres, the cruciate and the sylvian." The author claims that the presence of the thermogenic centre in the corpus striatum was first described by himself in April 1884. In 1887 he showed

that the rise of temperature, following puncture of the corpus striatum, was due to increased production, and not to diminished dissipation of heat. A similar rise in temperature takes place after puncture of the anterior end of the optic thalami, but the centre where the most rapid rise of temperature occurs is the tuber cinereum, puncture of which through the roof of the mouth in a rabbit having been followed within four minutes by a temperature of 110° Fahr. The tuber cinereum is to be regarded as possessing four functions—thermogenic, polypnœic, polyuric, and vaso-tonic. There are no thermogenic centres of a marked thermic capacity in the pons, medulla, or spinal cord. Thermo-taxis nerves probably pass downwards, both in the cerebro-spinal and the sympathetic system.

The second lecture discusses *thermolysis*, or heat dissipation. Fever may be the result of over-production of heat or diminished dissipation. The author has specially studied this by a calorimeter in the cold, hot, and sweating stages of malarial paroxysms. He found that during the initial stage, or chill-period, the dissipation of heat is slightly diminished, and the production enormously increased. During the period of defervescence, heat dissipation is greatly increased and heat production does not regain its original height, and probably in a continued fever the fever continues because of an altered relation between heat production and heat dissipation, without regard to an increased or diminished heat production.

The third chapter consists largely of an abstract of a Russian paper by Lichacheff and Avroroff upon the heat phenomena in malarial fever, which confirms the author's researches.

The mechanism of the production of fever is of great importance. It is thus useful to have Dr Ott's work upon its relation to the nervous system summarised in this volume, together with abstracts and references to other papers on the same subject. We note, however, that carbon dioxide is systematically referred to all through as Co<sub>2</sub>.

**DEFECTIVE CHILDREN.** By various Authors. Edited by T. N. (385) KELYNACK. Pp. xvi+462. John Bale, Sons & Danielsson, Ltd., London, 1915. Pr. 7s. 6d. net.

"THIS work has been prepared in order to provide in a succinct and practical form information regarding the various kinds of defectiveness met with in children of school-going age." It consists of a collection of a number of separate articles by various authors upon different types of defectiveness, both physical and mental defects being considered.

The first chapter, by Dr E. W. Hope, deals with "defective children and the co-relation of the public services," and might profitably have been expanded. The second, by Dr Hamilton C. Marr, on the "mentally defective child," is specially good, supplying exactly the information which is wanted, and refers to the important work of Shaw Bolton on the cerebral cortex in this condition. The third chapter, by Dr D. W. Hunter, on "idiots and imbeciles," is somewhat diffuse. It is stated that "mental defect does not appear suddenly as a sport in a stock otherwise healthy," and no reference is made to Dr Goddard's recent work on feeble-mindedness.

There then follow a number of chapters on physical and mental defects which include "the epileptic child," "criminal children," "paralytic cripples," "tuberculous cripples," "defects of vision," "the deaf child," "speech defects in childhood and early adolescence," "spinal defects in young subjects," "cardio-vascular defects in children," "the rachitic child," and "defective growth and development in infancy, childhood and youth."

Then follow two chapters on "defective girls in secondary schools," and "defective boys in secondary schools," while most useful information may be obtained from the chapters on "school clinics," "dental clinics for children," "open-air schools and residential schools for defective children," and "schools for cripple children."

The book concludes with chapters on defective children in Scotland, in Ireland, in Canada, in the United States, in France, in Germany, and in Hungary.

In a work of this kind there must be, and is, a considerable amount of overlapping, and although the information tends in places to be somewhat too generalised and away from the point, the book will be found of use, especially to school medical officers and to those in charge of institutions for defective children, if for no other reason than on account of the full bibliography at the end of each chapter.

**PRACTICAL MEDICAL ELECTRICITY. A Handbook for House (386) Surgeons and Practitioners.** ALFRED C. NORMAN. Pp. viii + 226. Profusely illustrated. The Scientific Press, Ltd., London, 1915. Pr. 5s. net.

"THIS little book is intended to be a link between the works on medical electricity proper and those written for the technical student." The aim has been to explain those elementary practical details which are usually taken for granted in text-books on medical electricity, since it is these very details which the beginner

has most difficulty in understanding. We may say at the beginning that the author has been quite successful.

The book is divided into two parts. The first part is general, and is devoted to a consideration of apparatus and technique. The descriptions given are short but clearly expressed, and anyone wishing to understand the main points of static and high frequency electricity, of galvanic, faradic, and sinusoidal currents, of the different types of apparatus in the market, and how they are worked from the main by continuous or alternating current, the arrangements for hydro-electric baths, and for ionic-medication, will find them all explained here. If anything, the descriptions tend to be too compressed, and many of the chapters might have been with advantage extended.

The second part deals with X-ray apparatus, and describes induction coils, interrupters, X-ray tubes, oscilloscope and valve tubes, switch boards and connections, fitting up of the X-ray installation, accessories for the X-ray room, fluoroscopy, radiography, and advanced X-ray work. This part, like the first, is characterised by shortness and clearness, and can be followed by the beginner without difficulty. The illustrations are good.

Medical electricity is becoming a very important factor in the treatment of nervous disease, and owing to the large number of new inventions continually being produced, a short and workable description of these instruments, the way they ought to be used, and their methods of producing therapeutic actions, is of great assistance in helping anyone who wishes to obtain a practical knowledge on this question. For this purpose this book may be safely recommended.

#### BOOKS AND PAMPHLETS RECEIVED.

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Crouzon, M. O. "Une nouvelle famille atteinte de dysostose cranio-faciale héréditaire" (*Bull. et Mém. Soc. méd. Hôp. de Paris*, 1915, Mars 26).

Gaylord, Hervey, and Marsh, Millard C. "Carcinoma of the Thyroid in the Salmonoid Fishes" (*State Institute for the Study of Malignant Disease*, 1914, April 22, Serial No. 99).

Flexner, Simon. "The Mode of Infection and Etiology of Epidemic Poliomyelitis" (*Amer. Dis. of Child.*, 1915, ix., pp. 353-357).

Flexner, Simon, and Amoss, Harold L. "Diffusion and Survival of the Poliomyelitic Virus" (*Journ. Exper. Med.*, 1915, xxi., pp. 509-514).

Flexner, Simon, and Amoss, Harold L. "The rapid Production of Antidysenteric Serum" (*Journ. Exper. Med.*, 1915, xxi., pp. 515-524).

Wilson, J. Gordon, and Pike, F. H. "Some Considerations on the Physiology of the Otic Labyrinth" (*Arch. Int. Med.*, 1914, xiv., 99, 911-920).

# **Review**

of

# **Neurology and Psychiatry**

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## **Original Articles**

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### **THE MENTAL SYMPTOMS IN DISSEMINATED SCLEROSIS.**

By D. MAXWELL ROSS, M.B., Ch.B.,

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THE occasional presence of mental symptoms in disseminated sclerosis is recognised by all authorities, but their views as to the frequency with which they occur show considerable variation. Charcot laid stress on them, and Raecke states that most authors recognise their presence in a large percentage of cases. He himself, out of thirty-seven, found only fifteen who presented no mental defect, and these were all in an early stage of the disease. Seiffer found that nine cases out of ten presented mental symptoms.

On the other hand, Diefendorf, in his "Clinical Psychiatry," points out the rarity of symptoms sufficient to necessitate the patient being placed in an asylum, and W. H. B. Stoddart, in his abstract (published in the *Review of Neurology and Psychiatry*), of a report by Raymond of five cases studied at the Salpêtrière, says, à propos of a statement made in the original paper—"This is surely rather far-fetched, as indeed is the whole subject. We know from experience that disseminated sclerosis is practically

never seen in asylums." Indeed, though there is a considerable literature on the subject by continental authors, the references to it in our own are very scanty.

The recent presence in the Royal Edinburgh Mental Hospital of no less than five cases of disseminated sclerosis among a population of 750 patients led Dr George M. Robertson, the Physician Superintendent, to suggest to me to place them on record, and I have to thank him for his guidance and encouragement in making this report.

It seems best to record the histories of the individual cases, and as certain of them are of somewhat exceptional interest, they are given in considerable detail.

#### CASE 1.

*Mrs S.*—The patient was admitted in April 1915, when 24 years of age.

*Family History.*—The parents both died of cerebral hæmorrhage, and one sister suffers from Pott's disease. Otherwise the family history is negative.

*Personal History.*—Patient is the youngest of four children, and has always been somewhat delicate. She had chorea at seven years old, which seems to have lasted about two years, and again when fifteen, following a broncho-pneumonia, she had a second attack which lasted for nine months. She is described as a precocious, clever child who read novels, including those of the Bröntes, when between six and seven.

*Present Illness.*—Between six and seven years ago she married, but three months before the marriage she was assaulted by her fiancé, and immediately after the assault she became exceedingly ill, suffering from persistent vomiting for some days. She herself attributes her illness to this episode.

Three months after marriage she became pregnant, and as the pregnancy advanced she developed marked symptoms of disseminated sclerosis, her gait becoming very ataxic and her speech indistinct. She was delivered at full time of a healthy child, who is now alive and well. After the confinement her physical symptoms became steadily worse, and in November of 1910 she went to the Longmore Hospital for Incurables in Edinburgh, where she remained till August 1913, and was then certified, as she had become too noisy and uncontrollable to be kept in a general

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hospital. She was sent to the Edinburgh District Asylum at Bangour, and when it became a military hospital was transferred to the Royal Edinburgh Mental Hospital.

*Present Physical Condition.*—She is now very helpless, being unable to walk at all. The left arm and leg show marked weakness, and there is a well-marked intention tremor. Sensibility to touch is impaired over the left arm and abdomen, with some slight analgesia in the same areas. All tendon jerks are markedly exaggerated; plantar response is extensor on both sides, and there is incontinence of both urine and fæces. She has a well-marked quick nystagmus.

*Present Mental Condition.*—There is very great emotional instability, her moods altering rapidly. She is usually cheerful, bursting into noisy staccato laughter as soon as she is spoken to. Frequently she becomes very elated, talking in a rather erotic manner about her various admirers, and expressing herself, with the aid of a great deal of slang, in a rude manner to those about her. This mood is interrupted by periods of marked irritability, accompanied by noisy crying.

The memory, both for remote and recent events, is good. For example, she asks quite intelligent questions as to the progress of the war. There is some impairment evident when she is tested with simple mental arithmetic, though she has no difficulty in repeating numerals, being accurate with this test to nine digits. She has no delusions and no hallucinations, and readily admits her excitability and bad temper. She is evidently proud of, and attached to, her child, but utterly indifferent to her husband. There is no distractibility, her power of attention being good.

It will thus be seen that the patient presents a marked disturbance of the emotions, accompanied by some intellectual enfeeblement, with a lack of real insight into her condition; the whole state suggesting the excited phase of manic-depressive insanity occurring in an enfeebled person.

### CASE 2.

*Miss H.*—The patient, a single woman, aged 27, was admitted on the 19th June 1915.

*Previous History.*—Patient was described by her relatives as having been a normal healthy girl until the end of May 1913, when symptoms of disseminated sclerosis commenced, the first

which she noticed being a stiffness in the left foot which soon affected the whole of that leg. From this point onwards the physical symptoms were progressive. She was able to carry on her work as a clerkess until January 1915, with occasional intervals during which she was under treatment at home and in hospitals. There seems to have been no mental impairment whatsoever. She is described as having been a bright, intelligent girl, who answered questions promptly and correctly. Her memory was good, and her mentality in every way normal.

About the 9th of June she became sleepless, and in a few days developed marked mental symptoms, becoming confused, violent, and excited. She was admitted here on the 9th of June.

*Present Physical Condition.*—Patient is quite unable to co-operate in the examination. She presents well-marked physical symptoms of the disease. Her voluntary power is weak over the whole body. There is a fine tremor of the hands. She is exceedingly unsteady, being unable to walk. All the tendon reflexes are exaggerated, the plantar response is extensor on both sides, both knee and ankle clonus are present, and she has little or no sphincter control.

*Mental Condition.*—The patient has passed through a typical attack of acute delirious insanity, during which she suffered from all the characteristic symptoms. She had hallucinations of sight and hearing, was confused and disoriented, restless, noisy, and inaccessible. The excitement and restlessness have now passed away, and she is dull, stupid, and indifferent, paying no attention to what is going on about her, and refusing to answer questions.

In this case the patient has suffered from a typical attack of acute delirious insanity presenting no features not usually found in the disease, and has now passed into an almost stuporose condition, in which she is entirely mute and apathetic.

### CASE 3.

*Miss C.*—The patient was admitted on 24th August 1887, at the age of 43.

*Family History.*—Her heredity was entirely good.

*Personal History.*—The patient was a woman of good education, who lived at home with her mother. She had always been emotional and hysterical, and although the home life was naturally very quiet, she had been indulged in every way possible.



*History of Illness.*—She was stated to have been more or less peculiar for from fourteen to twenty years. She imagined men were in love with her if they looked at her, and she wrote foolish letters to all sorts of individuals. She said she heard voices which abused her, but from the time of her admission onwards she gave no definite sign of the presence of hallucinations. At times she complained of bodily ills, especially of ovarian and mammary pains. Her physical condition on admission was very good. She was somewhat depressed, and had ideas of suspicion and persecution, and complained from time to time of various physical diseases. Her history up to 1909 shows very little change in her mental state. She remained suspicious and delusional, and somewhat erotic. At times she became markedly peevish, quarrelsome, and irritable. At other times she had periods of comparative wellness, when she could be trusted and was given parole of the Institution grounds.

In November 1909 the progress notes state that "she complains of weakness in the right leg, which is purely hysterical." This was obviously the first symptom of disseminated sclerosis, which developed steadily throughout the ensuing year, so that in December 1910 a definite diagnosis was made, and she then presented practically all the characteristic symptoms. She was seen in February 1911 by Dr Byrom Bramwell, who confirmed the diagnosis, and during the year she became completely bedridden. She is described in October 1911 as a "quiet, mild little lady, rather sensitive and emotional; disappointed and hurt if she fancies she is being forgotten by the medical officer when he passes her room without going in, and pleased and happy when paid attention to and taken notice of. She converses in a very friendly way on simple topics, and is, on the whole, bright and cheerful. She is not, at this time, giving expression to any delusions." During the course of the year she was examined by Sir Robert Philip, who discovered early phthisis in both apices, and recommended treatment by Beraneck's tuberculin. This was carried out during the year 1912, and was associated with a gain in weight, and an entire disappearance of all the phthisical symptoms. She remained very helpless and bedridden up to the time of her death from broncho-pneumonia, following influenza, in March 1915.

Her *mental symptoms* during the last three years of her life

underwent little change. She was very childish, facile, easily pleased by any little attention, always delighted to see anyone of the opposite sex, and able to carry on a simple conversation. At times she said she would not take food because she was depriving other people of it, but beyond this she did not express any delusional ideas whatsoever. She had no hallucinations, and her memory was fairly good. With the nurses she at times had outbursts of bad temper, and was often very irritable and selfish.

In this case the onset of the disseminated sclerosis in 1910 was associated with a change in the degree of mental symptoms. Her delusions and suspicions gradually became less prominent, and her periods of mild depression and irritability less marked. She presented, however, in place of this, a progressive though slight enfeeblement, and a characteristic feeling of happiness quite disproportionate to her physical condition.

#### CASE 4.

*Mrs M. S.*—The patient was admitted in August 1910. She was then aged 56.

*Family History.*—Patient's family are all stated to have been neurotic, and one brother suffered from epilepsy.

*Personal History.*—She was described as a charming and accomplished woman, who married a man of very much lower social rank than herself. She had three children, two of whom died in childhood, while the third is alive and healthy. During the earlier years of her life her habits were correct, but latterly she became very alcoholic, and led a most irregular and loose life. She was for a considerable time under treatment in an inebriate home.

*History of Present Illness.*—Five weeks before admission the patient presented definite mental symptoms. She had been drinking heavily up to the time of admission, when she presented marked confusion, with disorientation and loss of memory for recent events, with fabrication.

*Physical Condition.*—She was in a poorly-nourished and weak condition, and had well-marked calf tenderness, along with loss of power in both legs and feebleness of the knees. Her knee jerks were lost, the plantar response was flexor, and there was no clonus. There were no tremors, no inco-ordination of the arms, and her

speech was unaffected. She was a well-marked case of Korsakoff's syndrome.

She presented, during the first few months of her illness, little or no change in her mental state, her memory defect remaining very pronounced. Throughout 1911 there was little change, her memory showing no improvement whatsoever. Her habits, however, became bad, and she was difficult to nurse and keep clean. During the year there gradually developed a tremor of the hands and head, and in January 1912 the progress notes state that "she is almost certainly a case of disseminated sclerosis." From this time her physical symptoms have been slightly progressive.

*Present Physical Condition.*—She has, during the entire illness, been bedridden, but is able to stand with the support of the nurse. She has now a marked tremor of the head; a well-marked intention tremor in both hands, but more especially the left; a slight lateral nystagmus in both eyes. The tendon reflexes in the arms are exaggerated, especially in the left. In the lower limbs the knee jerks are very much diminished, but can be obtained on reinforcement, as can also both ankle jerks. There is no ankle or knee clonus. Sensation is accurate and active throughout, and in the soles of both feet there is some hyper-æsthesia, and the plantar reflexes could not be elicited on this account. Oppenheim, however, is flexor. There is marked inco-ordination in both legs. Owing to her habits it is difficult to ascertain whether she has full sphincter control.

*Present Mental Condition.*—Mentally her present state is one of partial disorientation, associated with a loss of memory for recent events, with some fabrication and well-marked emotional instability. She knows where she is, but has no idea as to the number of the ward she is in, though she has been there for four years. She says correctly that the month is June, but adds that the year is 1908. She cannot remember the names of any of the doctors or nurses, and says her tremor has only been present for five weeks, giving a full account of how it was caused by an accident she had while walking along the road with her son. Her general memory is also very poor. She cannot tell whether France is a kingdom or a republic, remembers nothing about the battles of Bannockburn or Flodden, and has no idea as to the date of the Boer War. Her calculations are also very defective—7 from 86 leaves 59, and 7 from that figure 42. Her habits are extremely degraded and filthy, so much so that it is never safe to shake

hands with her. She has no hallucinations, and no very definite or fixed delusions.

She shows considerable emotional instability, her moods varying from time to time. As a rule she is rather depressed, insisting that she is "dying in a shake," and asking the doctors to see that her will is made, as she will be dead in the morning. At other times she is mildly elated, any bit of news, such as a prospective visit from a friend, being sufficient to produce this mood, in which she is all smiles and sings cheerfully to herself. Occasionally she is intensely irritable, and once, when purposely slightly irritated, flew into a passion so violent as to be homicidal, although an hour later she was as cheerful as possible.

In summary, the patient presents the memory defects characteristic of Korsakow's syndrome, marked mental degradation, and emotional instability.

#### CASE 5.

*Mr J. D.*—His present age is 77. His first admission was in March 1878; his second in July 1893.

*Family History.*—His heredity is good.

*Personal History.*—The patient is a well-educated, single man, who was employed in the Inland Revenue, and was for the most part stationed in London.

*First Admission.*—The patient's mental symptoms began in June 1877, and were of gradual onset, so that he was not admitted to the Institution till March 1878. He was then described as being restless and depressed. His memory was impaired, and his conversation somewhat incoherent. His bodily health and condition were good. The depression gradually passed away, and he was always quiet and reserved; but though his conversation was, as a rule, very rational indeed, his conduct was markedly abnormal. He was extremely untidy in his dress, muttered to himself a great deal, and performed numerous eccentric acts; as, for example, refusing to pass a tree without running round it several times, and not allowing anyone to pass behind his back. He was discharged from the Institution in November 1885, his mental condition being unchanged, and his physical condition remaining good. He was sent first to an English asylum, and from there discharged.

*Second Admission.*—He was readmitted in July 1893, in a miserable state. He exhibited general untidiness and personal

carelessness, his condition being filthy. He had pediculosis, and an eczematous skin eruption, probably due to dirt. Mentally he had some enfeeblement, and his memory for recent events was defective. There was a good deal of confusion, and he suffered from somewhat indefinite delusions of conspiracy against himself. Physically he was anæmic and flabby. He was tremulous all over, his fingers shaking markedly when the hands were held out. His gait was slightly unsteady, and the knee jerks were exaggerated. Dr George Mackay, who examined his eyes, reported that he had toxic amblyopia, with perhaps retro-bulbar neuritis.

Within a fortnight of his admission his confusion is noted as being markedly less, and his memory better. The following year his physical condition must have greatly improved, as he made his escape and walked to Stirling. In January 1895 it is stated that he suffered from hallucinations of hearing. In 1899 he is noted as entertaining delusions of conspiracy against himself. He was facile, but had a considerable degree of self-control, as although he had parole, and was allowed to be out of the Institution during the greater part of the day, he did not take advantage of his freedom in any way, making no attempt to escape. There has been no great change in his mental condition up to the present time.

In December 1905 he is noted as being very tremulous, but there was no diagnosis of disseminated sclerosis made at the time.

*Present Condition.*—Mentally he is an irritable, unsociable old man, who puts no trust or confidence in anyone in the Institution. His orientation is good, his memory clear, and his general knowledge excellent. He remembers correctly how long he has been here, and acknowledges that the abuse of alcohol had something to do with his illness. He suffers from both delusions and hallucinations. The delusions are those of persecution; for example, he explains the tremors of his hand as due to "annoyance," and says that certain individuals in the house can send the annoyance from their brains to cause the tremor. He hears voices and talks to them, but apparently the other special senses are not affected.

*Physical Condition.*—He is too suspicious and irritable to allow of a very full examination being made, but he has a marked tremor of the head and lower jaw. There is a well-marked double intention tremor, and a slight inco-ordination in the lower limbs, the gait being a little uncertain. Tendon reflexes, both of arms and legs, are diminished. Vision is fairly good for a man of his age;

nystagmus could not be elicited, but is noted as being present in 1913. There is a slight staccato speech.

In summary, his history seems to point to his having suffered from paranoia, the onset of which was associated with a state of depression. Following his discharge in 1885, he had a period of excessive alcoholism, and was readmitted in a state somewhat suggestive of Korsakow's syndrome. His physical condition under treatment must have greatly improved, but he probably never quite returned to normal health, and it is hard to say from the notes at our disposal exactly when the symptoms indicative of disseminated sclerosis first made their appearance. His mental state does not appear to have been affected by the physical condition, beyond the fact that he has developed delusions which centre on the tremors from which he suffers. He shows no emotional peculiarity except his irritability, and presents only a very slight degree of enfeeblement.

If the mental symptoms presented by the four cases in which a satisfactory examination is possible are analysed, it is found that the most outstanding is the emotional instability which is present in all. In two there is a characteristic euphoria; in one, although the moods show great variability, the prevailing one is that of depression; and in the fourth the disturbance takes the form of extreme irritability.

In practically all the literature on the subject attention is drawn to the disturbance of the emotions. Charcot, in his original paper on the disease, describes a blunting of the emotional faculties, and states that the dominant feeling is one of stupid indifference to all things, a condition presented only by the second case, who has just passed through an acute delirious episode, of which all the symptoms have not yet disappeared. Samuel Wilks, on the other hand, in his "Lectures on Diseases of the Nervous System" (1878), in contrasting the disease with general paralysis, lays great stress on the euphoric state as follows:—"The patient, however, is not depressed, he is more often happy, and is always ready to cry or laugh when spoken to, more often the latter."

Practically all the later authors describe the euphoric state as being characteristic. Thus Ballet, Diefendorf, Seiffer, Raecke, and Turner and Grainger Stewart, all describe the temperament as being peculiarly cheerful and optimistic. Tanzi, on the con-

trary, says that the state of mind is often one of depression, and that it is sometimes variable and sometimes irritable.

Ballet, who deals with the subject at some length in his "Traité de Pathologie Mentale," compares the tendency to uncontrollable laughter or tears to that found in pseudo-bulbar paralysis. The psychic symptoms do not cause the laughter or tears, and though they are commonly found in association, the intellectual symptoms in some cases are well-marked, while the laughter is almost absent, and in others, where the intellectual changes are few, the laughter is very striking. Oppenheim claims to have been the first to point out this lack of relationship between the mental symptoms and the uncontrollable laughter, though Ballet states that it has also been described by Pierre Marie.

All the cases except the second have some permanent enfeeblement of the intellect, and it will be of interest to see whether this symptom will also develop in the second case, when the acute symptoms pass away and convalescence from the delirious episode has taken place.

A lack of interest in all things is said by Charcot, Ballet, and others to be characteristic, but cannot be said to be present in this series of cases. They do present, however, the exaggerated interest in minor affairs, and the indifference to more important matters so characteristic of most forms of insanity in which slight enfeeblement exists.

According to Seiffer, the impairment of the intellect is especially seen, amongst other things, as a memory defect. Charcot and Tanzi also describe this as being usually present. In this series it has not been an outstanding symptom, except in the one case which suffered from Korsakow's syndrome, in which the defect is typical of this disease.

Delusions are rare, but paranoid ideas do occur. One of the cases described by Raecke was characteristically paranoid, and some time ago I was consulted by a man whose wife, a typical case of disseminated sclerosis, had formed the delusion that he was unfaithful, and this with a neighbour whose age was almost seventy. Ballet and Raecke state that, in the cases where euphoria is marked, fleeting grandiose delusions may occur. In the present series of cases fleeting, but not grandiose, ideas have also been noted, as, for example, the refusal of one to take her food because she was depriving others of it, and the frequently

expressed idea of another that she is "dying in a shake." The development of disseminated sclerosis in Case 5, where the patient for many years had suffered from systematised delusional insanity, has produced little effect beyond giving rise to delusions centring on the physical symptoms.

One case suffered from a typical attack of acute delirious insanity, and Raecke describes such episodes as at times occurring in the early stages of the disease. Seiffer describes one such case in his series of ten, and expresses the view that the episode was probably due to a sclerotic brain process, and was not merely a casual complication.

If the symptoms presented by this series of cases, and those described by other writers, be summarised, there are two which may be looked on as characteristic of the condition. These are an enfeeblement of the intellect as a whole, and a disturbance of the emotions. The former is usually of slight degree, and is very slowly progressive. The latter consists most frequently of a more or less marked euphoria, less commonly of depression or of irritability, all three states being associated with considerable variability in the moods.

In addition to these symptoms there are found, not infrequently, fleeting variable delusions, impairment of the memory, and acute delirious episodes presenting the typical hallucinations, fleeting delusions, and confusion of that state. In a few cases paranoid ideas develop.

Oppenheim, in his "Textbook on Nervous Diseases," cites Seiffer and Daunenberger as having attempted to show that there is a special type of dementia due to multiple sclerosis, which they term polysclerotic dementia, and the above summary shows that the mental symptoms present characteristics which, to some extent, justify the assertion. On the other hand, however, Ballet cites Phillipe and Cestan as denying the statements of Daunenberger that there is a mental type of disseminated sclerosis. The observations of these authorities, as quoted by Ballet, agree with those of Vulpian, that "the disease, so far as the mental symptoms are concerned, presents an inconstancy, irregularity, and polymorphism which exactly corresponds to the irregular and polymorphic type of the lesions." In spite of these assertions one is justified in concluding that mental symptoms, when present in disseminated sclerosis, are at least sufficiently character-



## MENTAL SYMPTOMS IN DISSEMINATED SCLEROSIS 373

istic to be of valuable aid to the clinician in making a differential diagnosis.

I have to express my indebtedness to Dr Isabel Emslie for valuable notes on the first two cases in this series.

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## EXTENSIVE OCCLUSION OF CEREBRAL ARTERIES IN DIPHTHERIA.

By J. D. ROLLESTON, M.D., and E. B. GUNSON, M.D.,  
Assistant Medical Officers, Grove Hospital, London.

A GIRL, aged 8 years, was admitted to hospital on 24th October 1914, with severe faucial and nasal diphtheria on the third day of disease. 16,000 units of antitoxin were given on admission, and again on the following day. There was a thick cloud of albumin in the urine.

The throat became clear on 28th October, but the same day the heart, hitherto normal, showed some right-sided dilatation and weakness of the first sound. The voice became nasal on the 30th, the ninth day of disease, and the child vomited once. On 2nd November triple rhythm was first noted on auscultation, and persisted during the following days. On the evening of 6th November she vomited again. The next morning, 7th November, the seventeenth day of disease, she complained of pain in the left side of the chest, and at 11.15 A.M., as the heart was being examined, she suddenly retched, her colour became cyanosed, the respirations rapid, and a convulsive movement of the right arm

and leg, with loss of consciousness, ensued. Cheyne-Stokes breathing rapidly developed. Ankle clonus and extensor response were present on both sides. Both abdominal reflexes were lost, but the corneal reflex, though absent on the right, was active on the left side. The temperature, which had been normal since 31st October, rose to 101 at 4 P.M. on 7th November, and gradually rose in the course of the following day until it reached 103° shortly before death, which took place at 1.45 A.M. on 9th November.

Examination of the heart by one of us (E. B. G.) one-and-a-half hours after the ictus gave the following results:—

The cardiac dulness extended 1 in. to the right of the middle line and 1½ in. outside the left nipple line. The liver extended 1½ in. below the costal margin. Marked gallop rhythm was present on auscultation. A combined respiratory and radial tracing showed a regular rhythm during the apnoeic periods, with a pulse rate of 118 per minute. During the dyspnoeic periods the pulse rate was increased to 130 per minute, and frequent premature ventricular contractions occurred (*v.* Figs. I. and II.).

At 1.30 P.M. on 7th November the right lower limb became rigid, and in the course of the afternoon and night the child had several slight convulsive attacks, with a more severe one after vomiting at 6.25 P.M. Mucus tended to collect in the fauces and saliva drained away from mouth. The power of deglutition being thus obviously in abeyance, it was thought advisable to resort to rectal feeding.

On 8th November the general condition remained the same all day, but the Cheyne-Stokes breathing had ceased. The pulse was very feeble, the cardiac and hepatic dulness remained unchanged, and gallop rhythm persisted on auscultation. Cardio-graphic tracings taken by one of us (E. B. G.) at 11.30 P.M. on 8th November showed frequent short paroxysms of tachycardia at rates of 230 to 240 per minute (*v.* Fig. IV.). The dominant rhythm, however, was a regular one at a rate of about 150 per minute, with a normal *a-c* interval (*v.* Fig. III.).

During the night the respirations became very laboured, and death took place at 1.45 A.M. on 9th November, *i.e.*, 38½ hours after the ictus.

The necropsy showed a clot entirely filling the basilar artery, and to a greater or less extent occluding all the arteries entering

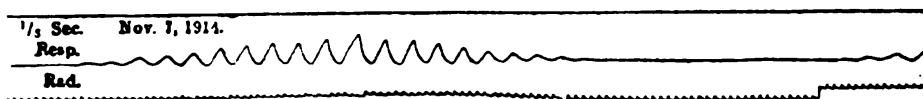


FIG. 1.—*Combined respiratory and radial curves. Showing Cheyne-Stokes respiration. Dyspnoeic period=33 seconds; apnoeic period=15 seconds. Pulse rate during apnoea=118 per minute; regular. Pulse rate during dyspnoea=130 per minute; frequent premature contractions.*

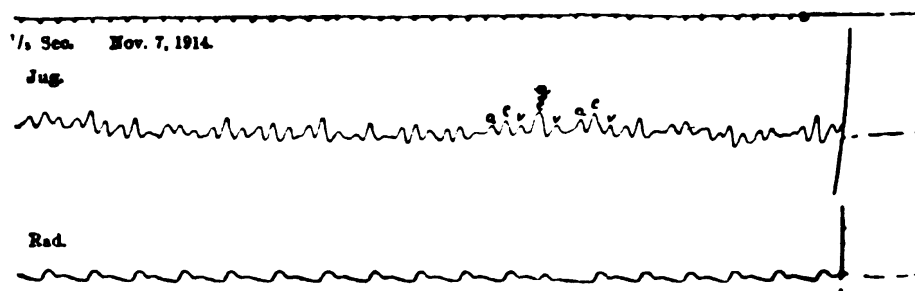


FIG. 2.—*Combined radial and jugular curves during an apnoeic period. Pulse rate=118 per minute. Premature ventricular contraction at x.*

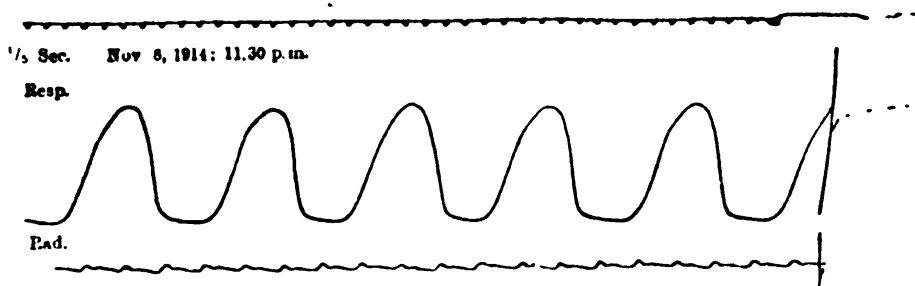


FIG. 3.—*Respiratory and radial curves to show regular respiration. Respiratory rate=45 per minute; pulse rate=148 per minute.*

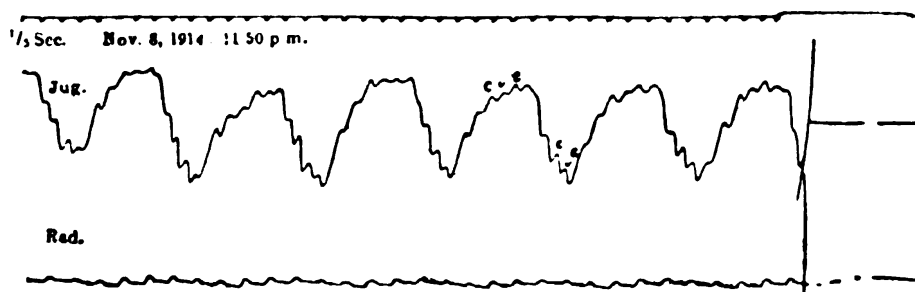


FIG. 4.—*Combined radial and jugular curves. Ventricular form of venous pulse. Pulse rate=235 per minute; respiratory rate=45 per minute.*

into the formation of the circle of Willis, viz., the posterior cerebral, posterior communicating, internal carotid, middle cerebral, and anterior cerebral arteries. The occlusion was much more marked on the right than on the left side.

On examination of the heart both ventricles were found to be dilated and filled with blood-clot, some of which, especially in the left ventricle, was of ante-mortem formation. A recent small infarct was found in the left kidney. The other organs presented no obvious naked-eye changes.

#### REMARKS.

Occlusion of cerebral arteries in diphtheria in all previously reported cases has been associated with hemiplegia, and is usually the result of embolism. An analysis of 80 cases of diphtheritic hemiplegia recently collected by one of us (J. D. R.<sup>1</sup>) showed that out of 18 in which a necropsy had been held, embolism had been found in 13, thrombosis in 3, hæmorrhage in 1, and sclerotic atrophy in 1. Embolism therefore appears to be the most common lesion in diphtheritic hemiplegia.

In the present case, the enlargement of the heart noticed during life, the existence of an ante-mortem clot found at the autopsy, and the presence of an infarct elsewhere are in favour of embolism. The very extensive nature of the clot renders it probable that a small primary embolus was followed by more considerable local thrombosis.

We have therefore adopted the more general and non-committal term of "occlusion," rather than "thrombosis" or "embolism," in the title of our paper.

The occlusion was most marked in the basilar artery, and it is interesting on that account to find that the case showed all the signs of complete basilar obstruction, which are described by Osler,<sup>2</sup> viz., bilateral paralysis, rigidity and spasm, sudden rise of temperature, and bulbar symptoms, especially vomiting, Cheyne-Stokes breathing, and tachycardia.

The fact that the left conjunctival reflex was present, while the right was lost, may be explained by the occlusion being less on the left than on the right side.

<sup>1</sup> *Clinical Journal*, 1913, xlii., p. 12.

<sup>2</sup> "Principles and Practice of Medicine," 8th ed., 1912, p. 1000.

## Abstracts.

### ANATOMY.

**ON THE DEVELOPMENT OF THE NEURO-MUSCULAR SPINDLE**  
(387) **IN THE EXTRINSIC EYE MUSCLES OF THE PIG.** ALAN  
CALLENDER SUTTON, *Amer. Journ. Anat.*, 1915, xviii., p. 117  
(12 figs.).

THE author used the intra-vitam method of staining with methylene blue in embryo pigs. He found that the nerve endings arise early in embryonic life. The axones grow out from the cells of the sensory ganglia into the pre-muscle mass. Here they form an intricate plexus, so as to bring the muscle cell in contact with the end of the nerve. The axone becomes attached to the myoblast by the simplest kind of a neurofibrillar net. With the development of the myoblast into the adult muscle fibre, this net becomes more and more complex. In addition to this net there is formed a plaque which the author is inclined, on morphological grounds, to regard as an intermediary structure, and which future work may identify as a receptor substance similar to that occurring in motor endings.

A. NINIAN BRUCE.

### PHYSIOLOGY.

**EXTIRPATION OF THE CEREBELLAR CORTEX.** (Demonstration  
(388) **zur Bindenextirpation des Kleinhirns.**) MAX ROTHMANN, *Neurol. Centralbl.*, 1914, xxxiii., Sept. 1, S. 1010.

THE author shows by experiments, for the details of which the original may be consulted, that in lesions of the cortex of the cerebellar hemispheres, the co-ordination of the positions of the different segments of the body, in particular those of the limbs, is disturbed, whereas in lesions of the cortex of the mesial parts of the cerebellum the co-ordination of head, trunk, and limb muscles in the performance of their static functions is disturbed.

S. A. K. WILSON.

**THE CONDUCTION WITHIN THE SPINAL CORD OF THE**  
(389) **AFFERENT IMPULSES PRODUCING PAIN AND THE**  
**VASOMOTOR REFLEXES.** S. W. RANSOM and C. L. VON HESS,  
*Amer. Journ. Physiol.*, 1915, xxviii., July 1, p. 128.

LATERAL hemisection in the upper part of the lumbar cord results in a great reduction of the depressor reaction obtained from stimulation of the sciatic on the side opposite to the lesion. The

depressor reactions from the sciatic on the side of the lesion and from the brachial nerves are normal. There is great reduction in the pressor reactions from both sciatics, the greater reduction being in the pressor reactions from the sciatic on the side of the lesion.

Posterior hemisection in the upper part of the lumbar cord almost entirely obliterates the pressor reflex from sciatic stimulation, but has less effect on the depressor reflex. Section of the posterior funiculus in the lumbar region is without influence on the vasomotor reflexes. Bilateral lesions in the apices of the posterior horns obliterates the pressor reflex.

A comparison of the effects of the same lesions on the conduction of pain and on the reflex changes in respiration and blood pressure shows that the afferent spinal path involved in the pressor reflex cannot be the same as the path for conscious pain, nor the same as the afferent path to the respiratory centre. On the other hand, it is possible that the afferent spinal path involved in the depressor reflex is the same as that involved in reflex changes in respiration, and in the conduction of pain.

None of the lesions (lateral hemisection, posterior hemisection, section of the posterior funiculus, destruction of the apices of the posterior horn) had any noticeable affect on the conduction of pain in these cats. It seems probable that there are two separate afferent spinal paths involved in the vasomotor reflexes—the pressor path, equally bilateral or chiefly homolateral in the apices of the posterior horn; and the depressor path, chiefly crossed and located in the lateral funiculus.

A. NINIAN BRUCE.

**EXPERIMENTAL REMOVAL OF THE PINEAL BODY.** W. E.  
(390) DANDY, *Johns Hopkins Hosp. Med. Soc.*, April 19, 1915. (*Johns Hopkins Hosp. Bull.*, 1915, xxvi. July, p. 264.)

AFTER three years' unsuccessful attempts at pinealectomy, the animals invariably dying from intra-ventricular hæmorrhage, Dandy has successfully used this method: The corpus callosum is split posteriorly for a short distance, and the roof of the third ventricle perforated, releasing the fluid, when the pineal is beautifully exposed under the great vein of Galen, at its origin upon the two small veins of Galen. By this method about thirty puppies, between the ages of ten days and one year, were pinealectomised, all with negative results. There was absolutely no evidence of any sexual, somatic, or mental precocity.

LEONARD J. KIDD.

**A CONTRIBUTION TO OUR KNOWLEDGE OF THE PINEAL  
(391) GLAND. (Contributo alla conoscenza della ghiandola pineale.)**

ARRIGO FRIGERIO, *Riv. di Patol. nerv. e ment.*, 1914, xix., August, p. 499.

FRIGERIO finds considerable histological variations in the human pineal body according to the age of the subject. In the newly-born child the pineal cells contain a lipoid substance which may be the expression of a secretory function, which, however, rapidly diminishes with age. With reference to the question of nerve elements in the pineal, he has found in some instances the special club-formations, described by Achúcarro and Walter, which some authors regard as of nervous nature. In some sections also he has been able, by the use of Spielmeyer's method, to demonstrate some bundles of medullated nerve fibres running from the base towards the free extremity of the pineal and ending beyond its limits. (The paper has no figures; a further paper is promised.)

LEONARD J. KIDD.

**MODIFICATIONS OF THE LIPO-MITOCHONDRIAL CONTENT  
(392) OF THE CELLS OF THE PINEAL BODY AFTER COM-**

**plete ablation of the genital organs. (Modificazioni del contenuto lipo-mitochondriale delle cellule della pineale dopo ablazione completa degli organi genitali.)** ELVINO RUGGERI, *Riv. di Patol. nerv. e ment.*, 1914, xix., Nov., p. 649 (6 figs.).

FROM a comparative histological examination of the pineal bodies of both normal and castrated white rats and pigs Ruggeri concludes that removal of the testes determines modifications of the structure of the pineal, consisting of a greater development of its mitochondrial elements, and a greater richness and uniformity of its lipid elements, which point to an increased functional activity of the gland. These signs of over-activity are associated (as he will show in a future paper) with the presence of numerous cells of lymphocytoid character, situated predominantly centrally, and with a hypertrophic condition of the fundamental (pineal) cells which are richer in granular contents than are those of the normal pineal.

LEONARD J. KIDD.

**HIBERNATION AND THE PITUITARY BODY. HARVEY CUSHING  
(393) and EMIL GOETSCH, *Journ. Exp. Med.*, 1915, xxii., July, p. 25.**

In a series of hibernating animals (woodchucks) it has been found that during the dormant period histological changes are apparent in many of the ductless glands. The most notable of

these changes occurs in the pituitary body. The gland not only diminishes in size, but the cells of the pars anterior, in some animals at least, completely lose their characteristic staining reactions to acid and basic dyes. At the end of the dormant period the gland swells, and as the cells enlarge they again acquire their differential affinity for acid, basic, and neutral stains, and at the same time karyokinetic figures may appear.

On the basis of these observations hibernation may be ascribed to a seasonal physiological wave of pluriglandular inactivity. The essential rôle may perhaps be ascribed to the pituitary body, not only for the reason that the most striking histological changes appear in it, but also because deprivation of the secretion of this gland alone of the entire ductless gland series produces a group of symptoms comparable to those of hibernation, namely, an unusual deposition of fat, a lowering of body temperature, slowing of pulse and respiration, fall in blood pressure, and often a pronounced somnolence.

A. NINIAN BRUCE.

**ON PITUITARY SECRETION.** DOUGLAS COW, *Journ. Physiol.*, 1915, (394) xlix., p. 367.

CERTAIN definite channels of communication exist (in the cat at any rate) between the ventricular cavity in the infundibular stalk and spaces in the anterior lobe of the pituitary. Under certain conditions an active principle (or principles) is demonstrable in the cerebro-spinal fluid, which principle fulfils every test for pituitary active principle that has been applied. The products of activity of the pituitary body are secreted into the cerebro-spinal fluid.

A. NINIAN BRUCE.

**DIVISION RATE IN CILIATE PROTOZOA AS INFLUENCED BY (395) THYROID CONSTITUENTS.** ROBERT A. BUDINGTON and HELEN F. HARVEY, *Biological Bull.*, 1915, xxviii., May, p. 304.

THE writers have given thyroid material taken from fishes (*Catostomus teres*), amphibia (*Rana pipiens*), reptiles (*Cistudo carolina*), chick, and cat to ciliate protozoa (*Paramæcium* and *Stylonichia*) as a food or as a factor in the medium in which they live. In all cases the results of their experiments are the same, viz., increased division rate. They hold that we may safely conclude that no matter how far apart taxonomically, or how distantly related phylogenetically the higher and lower members of the vertebrate phylum may be, certain physiological qualities in the thyroid glands are constant and similar in all.

LEONARD J. KIDD.



## PSYCHOLOGY.

**THE PSYCHOLOGY OF MISERS.** CHARLES H. BURR, *Journ. Nerv. (396) and Ment. Dis.*, 1915, xlii., June, p. 383.

A MOST interesting general paper, with abstracts of cases culled from literature. No attempt is made to analyse the cases, the author being content simply to consider the symptomatology.

D. K. HENDERSON.

**ETHICAL ASPECTS OF PSYCHOANALYSIS.** JOHN T. MACCURDY, (397) *Johns Hopkins Hosp. Bull.*, 1915, xxvi., May, p. 169.

CERTAIN of the features of psychoanalysis have aroused antagonism and caused dissension among its disciples. This is to be accounted for by the fact that while these teachings are true, they excite an emotional hostility. This emotion is due to the fact that psychoanalytic doctrines arouse moral repugnance, a fact which forces us to ask whether the ethical aspects of this new science are good or bad. The author finds that when rightly viewed these theories teach us that man has an inherent morality stronger than is suspected, and that he has succeeded in transforming his lowest, most selfish tendencies into work for the betterment of his kind. Finally, in psychoanalysis we see the promise of a more honest form of thinking, not only in the individual, but also in the community. Its very basis, therefore, is ethical; an emotional misconception accounts for the opposition it has earned. Psychoanalysis is a new science; the conclusions of some of its adherents may be made in haste, and may be crude, and, in so far as they are crude, incorrect, but its basic concepts, if understood rightly, can have no opponents.

A. NINIAN BRUCE.

**THE BINET-SIMON METHOD AND THE INTELLIGENCE OF (398) ADULT PRISONERS.** M. HAMBLIN SMITH, *Lancet*, 1915, July 17, p. 120.

THE tests were tried upon 160 cases (80 consecutive males and 80 consecutive females). Of the males, 49 regarded as feeble-minded were found to have an average intelligence corresponding to  $9\frac{1}{2}$  years, and 31 non-feeble-minded an average of  $11\frac{3}{4}$  years; of the females, 47 feeble-minded had an average mental age of 9 years, and 33 non-feeble-minded an average of  $10\frac{4}{5}$  years. The following conclusions were reached: (1) The Binet-Simon method is an excellent means of estimating the standard of intelligence of any particular subject. (2) The method, having been primarily devised for use with children of school age, would be rendered more useful for adults if certain modifications were made in its details. (3) That defect of intelligence, as estimated by this

method, affords strong confirmation of a diagnosis of feeble-mindedness made upon other considerations. (4) That failure to reach any given standard of intelligence is not of itself sufficient reason for regarding a subject as feeble-minded

W. B. DRUMMOND.

**WHAT TESTS IN CHILDHOOD ARE BEST CALCULATED TO  
(399) THROW LIGHT UPON THE MENTAL CAPACITIES OF  
MENTAL DEFECTIVES FOR FUTURE WORK?** W. A. Potts,  
*Lancet*, 1915, July 17, p. 124.

WARNER'S hand-balance test is useful for weeding out some who will never hold their own in the world. The dynamometer is useful as an index of bodily strength. Mental defectives tend to be weak and ambidextrous, having two inferior hands. The form-board as used by Goddard at Vineland supplies a good test. Rate of tapping is not of much value. De Sanctis is quoted in favour of experiments with reaction-time recorders and the æsthesiometer. The cancellation of an assigned symbol from a prepared form is a test often used by the writer, who pays more attention to the manner in which the subject goes to work than to the actual speed and correctness of the results.

Apart from tests, the author lays special stress upon the possession of (1) general ability; (2) strength of character and will-power, including ambition; (3) good health; (4) pluck. With regard to school records, manual work is of the greatest importance. Of a group of defectives, 72 per cent. of those at work were first-class at manual work, but only 33 per cent. of those not at work were good at manual. All the non-workers who had been good at manual at school had some other handicap, such as ill-health. As to other school subjects, reading and writing are not much use as guides; arithmetic is of more value. An important index to success is continuous improvement in a special school or class. The best test of such improvement is supplied by the Binet scale.

W. B. DRUMMOND.

## PATHOLOGY.

**THE HISTOGENESIS OF TABES.** (Zur Histogenese der Tabes.  
(400) *Vorläufige Mitteilung.*) HUGO RICHTER, *Neurol. Centralbl.*, 1914,  
xxxiii., Juli 16, S. 882.

1. THE changes described by Nageotte in the so-called "nervous radicularis" are constant in tabes and tabo-paralysis (24 cases). Their characteristic feature is the presence and overgrowth of granulation-cells of an epithelioid nature, analogous to the

endothelium of lymph capillaries; neither lymphocytes nor plasma cells are here constant.

2. The process always begins at the tip of the arachnoid sac, where it accompanies the roots as they are passing through the dura. It affects the sensory more than the motor root for anatomical reasons; the degree of involvement of the latter is variable, and depends on local circumstances. The degeneration of the sensory root at this point is usually patchy.

3. The process is essentially progressive, but in a periodic fashion.

4. Asymmetry of the two sides of the cord in the pathological process is not uncommon.

5. In two cases the author found unmistakable spirochaetes in the granulations on the roots.

S. A. K. WILSON.

**THE HISTOPATHOLOGY OF TABES DORSALIS.** (Beiträge zur (401) *Histopathologie der Tabes dorsalis. Vorläufige Mitteilung.*)  
G. B. HASSIN, *Neurol. Centralbl.*, 1914, xxxiii., Oct. 16, S. 1138.

1. IN the sclerosed parts of the dorsal columns it is common to find, by Bielschowsky's method, that a considerable number of axons remain intact. These degenerate in an irregular and "spotty" fashion. In some cases they are not at all different from what is found in disseminated sclerosis.

2. In preparations stained by Mallory's method proliferation of the minute glial fibres is readily seen.

3. In all of fourteen cases examined, overgrowth of the ependyma of the central canal was found.

4. Hyperplasia of pia and dura, with evidence of inflammatory infiltration, is a constant feature in tabes. These processes are always well seen at the Obersteiner-Redlich zone, and at Nageotte's points. Lymphocytes and plasma-cells are also found round the vessels of the white and gray matter, to a less extent than in the meninges. Analogous changes are of course found in the brains of tabo-paralytics, but not in those of patients with tabetic psychoses. Spinal meningitis is a constant finding in tabes.

5. A diffuse parenchymatous change is a common feature in the cord of tabo-paralytics, but not in cases of pure tabes.

6. Analogous changes are found in the optic nerve in tabetic optic atrophy.

7. The spinal ganglia are rarely altered to any extent.

8. The irregular "spotty" degeneration of the fibres of the dorsal columns is in the author's opinion the characteristic patho-

logical feature of tabes, produced, he believes, by the infiltration and hyperplasia above mentioned. In tabes individual fibres in the dorsal roots degenerate periodically, and not roots as a whole.

S. A. K. WILSON.

**A STUDY OF THE SPINAL CORD IN A CASE OF ISOLATED  
(402) ATROPHY OF THE SMALL MUSCLES OF THE HANDS.**

M. E. MORSE, *Journ. Nerv. and Ment. Dis.*, 1915, xlii., May, p. 257.

A MAN, 58 years, who had been excessively alcholic for a number of years, was admitted to the Worcester State Hospital suffering from marked depression. The right hand bore a large scar, with considerable fleshy deformity on the ulnar side of the wrist, and also showed the loss of the fourth and fifth finger-tips. There was very marked atrophy of the muscles of the thenar and hypo-thenar eminences, and also some atrophy of the interossei. The left hand showed a definite shrinkage of the thenar and nypo-thenar eminences, but no atrophy of the interossei. The patient died ten days after admission from broncho-pneumonia.

Atrophic and degenerative changes were found in the nerve cells, widely distributed in the gray matter, but more prominent in the postero-lateral and post-postero-lateral columns. Cell losses occurred in the postero-lateral and post-postero-lateral columns.

The blood vessels were thickened, and showed perivascular lymphocytic infiltration confined almost entirely to the sulcal arteries and their branches to the anterior horns.

The lesion commenced in the middle of the seventh cervical, and extended through the first dorsal segment.

D. K. HENDERSON.

## CLINICAL NEUROLOGY.

**NERVOUS AND MENTAL DISEASES AND THE NEWER PATH-**

**(403) OLOGY.** F. X. DERCUM, *Journ. Nerv. and Ment. Dis.*, 1915, xlii., June, p. 358.

THE author believes that disturbances of metabolism, using this term in its widest sense, are the basic factors in mental diseases. He separates mental diseases into two great groups; first, one in which the disease is due to infection or exogenous poisoning; and second, one in which the disease is due to endogenous poisoning. A very discouraging picture is drawn, as may be evidenced by the following: "At puberty, in adolescence, in early adult life, the sexual glands, and with them all of the other glands of internal secretion and hormone producing structures and tissues, take on a

new rôle, enter upon a new chemistry, and if the organism be badly constructed, be badly put together, this chemistry becomes aberrant and toxic, and mental disease results. How powerless we must necessarily be in the face of such facts need not be dwelt upon."

D. K. HENDERSON.

**CONCERNING CEREBRAL MORPHOLOGY IN ITS RELATION**  
(404) **TO CEREBRAL LOCALISATION.** CHARLES K. MILLS, *Journ. Nerv. and Ment. Dis.*, 1915, xlii., June, p. 322.

THIS paper is a very general one, partly historical, and partly in the nature of a review of the more recent work of C. V. Ariens Kappers, Brodmann, Shaw Bolton, Mott, Elliot Smith, Malone, and Wilson.

It cannot be adequately abstracted.

D. K. HENDERSON.

**REMARKS ON THE CENTRAL REPRESENTATION OF SENSATION.** WILLIAM G. SPILLER, *Journ. Nerv. and Ment. Dis.*, 1915, xlii., June, p. 399.

It seems probable that the fibres of pain and temperature occupy the tractus spinothalamicus et spinotectalis. In division of the antero-lateral column of the cord for the relief of pain it is necessary that this tract should be divided, otherwise pain conduction may not be destroyed. Two cases are reported in support of the above claim. In the discussion of another case the point is emphasised that the central fibres for touch in the face are distinct from those for pain and temperature in the face, as high, at least, as the upper part of the pons, and presumably higher.

The descending root of the fifth nerve contains only fibres of pain and temperature, and not only are the fibres of temperature sensation distinct from those of pain, but there may even be fibres for the conduction of heat stimuli distinct from those for the conduction of cold stimuli.

The tractus spinothalamicus et spinotectalis is situated near Gower's tract throughout its course, as high as where the latter separates from it in the upper part of the pons to enter the cerebellum, and it is probably for this reason that disturbances of sensation have been attributed to lesions of Gower's tract. In occlusion of the posterior inferior cerebellar artery the tractus spinothalamicus et spinotectalis is usually implicated in the lesion, and it is probably for this reason that the sensations of pain and temperature are affected. The three divisions of the fifth nerve are separately represented in the spinal root, and

in addition, the sensations of temperature seem to depend on different fibres than do those of pain. It is probable that the deep sensation of the face depends, in part at least, on the integrity of the seventh nerve. He believes that sensation, not including the special senses, is represented at the posterior part of the posterior limb of the internal capsule, and that sensory fibres are not intimately intermingled with motor fibres in the posterior limb of the internal capsule.

D. K. HENDERSON.

**MUSCLE-SHORTENING REFLEXES. (Verkürzungsreflexe.)**

(406) J. K. A. W. SALOMONSON, *Neurol. Centralbl.*, 1914, xxxiii., Nov. 1, S. 1180.

THE author finds that abrupt passive approximation of the two extremities of a given muscle, as, for instance, in the tibialis anticus by dorsiflexion, is followed after the briefest of latent periods by a twitch, also short and abrupt, of the muscle concerned. This muscle-shortening reflex is readily obtainable in the hamstrings. It is not found, according to the author, in more than 20 or 30 per cent. of normal individuals. It is to be distinguished from Westphal's paradoxical reflex, where the resulting muscle contraction is prolonged and tonic. The latter is not a reflex in the strict sense, whereas the author considers his is. Of its possible clinical significance he has little to say.

S. A. K. WILSON.

**MUSCLE TONUS AND TENDON REFLEXES IN RELATION TO**

(407) **THE DOUBLE INNERVATION OF STRIPED MUSCLE.**

(Über Muskeltonus und Sehnenreflexe im Zusammenhang mit der doppelten Innervation quergestreifter Muskeln.) J. W.

LANGELAAN, *Neurol. Centralbl.*, 1914, xxxiii., Okt. 16, S. 1140.

IN this interesting paper Langelaan brings forward experimental evidence tending to show that muscle tonus is dependent on the integrity of the proprioceptive reflex arc (sympathetic) from muscle *via* spinal cord and motor sympathetic fibre back to muscle. Section of a dorsal root results in both atony and loss of tendon reflex, whereas section of the rami communicantes results in loss of tone with conservation or exaggeration of the tendon reflexes. Decerebrate rigidity is to be regarded as a spasm of sympathetic origin, due to separation of upper basal ganglia and hypo-thalamus from lower sympathetic centres: the latter become uncontrolled.

S. A. K. WILSON.

- MYOHYPERTROPHIA KYMOPARALYTICA (LOCALISED MUSCULAR HYPERTROPHY, MYOKYMIA, MUSCULAR CRAMPS, AND PARALYSIS).** (Uber Myohypertrophia kymoparalytica lokalisierte Muskelhypertrophie mit Myokymie, Crampi musculorum, und Lähmung.) H. OPPENHEIM, *Neurol. Centralbl.*, 1914, xxxiii., Okt. 1, S. 1106.

IN this curious case the patient was a lady of 48, who presented true hypertrophy of the right upper arm, especially the flexors, cramps of the right forearm flexors, myokymia chiefly of the right biceps, but also to a less extent in almost the whole of the right arm musculature, and paresis in much the same distribution as the myokymia. Sensibility was normal, and there was neither pain nor paræsthesia. Contractions produced by the employment of electricity usually passed into a cramp. The condition had existed for some three or four years.

Oppenheim's paper is enriched with interesting theoretical considerations, and with references to the occurrence of analogous symptoms in other pathological conditions. He is inclined to suggest a myopathic basis for the condition.

S. A. K. WILSON.

- MUSCLE TONICITY, EMOTIONAL EXPRESSION, AND THE CEREBRAL TONETIC APPARATUS.** (409) Considered especially with reference to a case of bilateral caudato-lenticular degeneration. CHARLES K. MILLS, *Neurol. Centralbl.*, 1914, xxxiii., Dec. 16, S. 1266.

MILLS' case is one of much scientific interest, which is deserving of full study in the original. It does not lend itself to brief description. Suffice it to say that the patient was paresed on the left side, mostly face and arm, and showed in addition marked involuntary howling, coupled with a facial expression as of pain, very pronounced hypertonicity (limbs and trunk), tonic perseveration, tremors of the head and upper extremities, dysarthria, and dysphagia. The chief lesions were atrophy in large part of the caudate nucleus on both sides, and symmetrical sclerosis of the anterior part of each lenticular nucleus. The capsule was also involved (right much more than left).

There is a valuable discussion on the pathogenesis of extrapyramidal motor symptoms. The author considers that the caudate syndrome of his case consists in hypertonicity and paresis of the affective motor apparatus, involuntary painful emotional expression, and various symptoms referable to the cortico-autonomic nervous system, vasomotor and secretory affections, disturbances of temperature, pulse, respiration, and of various forms of glandular activity.

S. A. K. WILSON.

**PSEUDOSCLEROSIS.** (Zur Pseudosklerose.) H. OPPENHEIM, *Neurol.* (410) *Centralbl.*, 1914, xxxiii., Nov. 16, S., 1202.

OPPENHEIM describes three clinical cases, which he places in the category of pseudo-sclerosis.

1. Male, aged 27. Gradual onset of slow tremors of head and limbs, slowing of speech, increased deep reflexes, abnormal corneal pigmentation in the form of a ring, enlarged spleen, area of liver dulness small, weakness of memory, no other physical symptoms.

2. Female, aged 26. Tremors of head and limbs increased in active movement, dysarthria, dysphagia, no spasticity, hysteriform (*sic*) attacks, fascicular tremors of the face, urticaria, dermatographia, tendency to involuntary laughing and crying, irritability, confusion, no outspoken dementia, pigmented ring on the cornea, spleen enlarged, liver small. "The case shows the complete and typical symptomatology of pseudo-sclerosis."

3. Female, aged 25. Tremors, dysarthria, depression, and tendency to emotional overaction, slowness of movement, frequency of micturition, sluggish pupillary reactions.

Oppenheim considers these cases conform to what he regards as the usual picture of pseudo-sclerosis, although it is easy to criticise this view. He considers that pseudo-sclerosis is closely allied to progressive lenticular degeneration, and discusses their differential diagnosis. He does not make it clear, however, that a number of cases have been described as pseudo-sclerosis in which no disease of the liver was found post-mortem, so that it is only a subdivision of the cases thus described that can be regarded as allied to progressive lenticular degeneration. S. A. K. WILSON.

**THE MORPHOLOGY AND FUNCTIONS OF THE CORPUS (411) STRIATUM.** JAMES HENDRIE LLOYD, *Journ. Nere. and Ment. Dis.*, 1915, xlii., June, p. 370.

THE author reviews the literature regarding the morphology of the corpus striatum, and expresses the opinion that the striate body in the human brain is a vestigial organ, representing the original fore-brain mass in the earliest ancestral types of the vertebrates. The symptoms caused by lesions of the lenticula are the symptoms merely of various affections of the fibres of the internal capsule. There is no such thing as a lenticular syndrome properly so-called.

D. K. HENDERSON.

**PILOUS CEREBRAL ADIPOSITY: A NEW SYNDROME.** WALTER (412) MAX KRAUS, *Amer. Journ. Ment. Sci.*, 1915, clxix., May, p. 737.

THE case of a man, 31 years, who at the age of 3 or 4 received a head injury from which he was unconscious for fourteen



hours, but following which he remained well until the age of 13, when he began to have attacks of Jacksonian epilepsy. These attacks occurred three to six times a year, but ceased entirely when he was 25 years old. When 27 years old he weighed 150 lbs., but then started to grow rapidly much fatter, so that in 1914 he weighed 282 lbs. In addition to his adiposity he was found to have a high carbohydrate tolerance, hyper-somnia, genital atrophy, tachycardia, and tachypnoea. In addition to the above usual symptoms the case showed two anomalous features—(1) An abundance of hair and (2) marked sweating.

D. K. HENDERSON.

**HERPES ZOSTER OF THE CEPHALIC EXTREMITY, WITH A  
(413) SPECIAL REFERENCE TO THE GENICULATE, AUDITORY,  
GLOSSOPHARYNGEAL, AND VAGAL SYNDROMES.**

NORMAN SHARPE, *Amer. Journ. Med Sci.*, 1915, cxlix., May, p. 725.

A TRIBUTE is paid to the work of Head and Campbell, and to the still more recent work of Ramsay Hunt, who, in demonstrating that the peripheral ganglia of the seventh, eighth, ninth, and tenth nerves, which contain unipolar cells, and like the spinal ganglia are developed from the neural ridge, and are subject to the inflammation of herpes zoster, has strengthened the belief that zona is an acute infectious condition caused by a specific agent.

Hunt's classification of herpes zoster of the cephalic extremity is followed.

The author uses strong arguments to disprove the view of Leonard Kidd, who denies that the seventh nerve has a sensory cutaneous zone, and says that herpes zoster oticus is not due to an inflammation of the geniculate ganglion.

Three personal cases are reported.

Some of the general conclusions are:—

The syndrome of the geniculate ganglion involvement is herpes zoster oticus alone, or with facial and auditory complications. Herpetic inflammations of the ninth and tenth nerve ganglia occur with herpes zoster oticus, herpes zoster pharyngis and laryngis, with pharyngeal and laryngeal palsies, occasionally with nausea and vomiting, bradycardia, hiccoughing, and other symptoms of vagal irritation. Herpetic inflammation of the eighth nerve ganglia is indicated by symptoms referable to the vestibular and cochlear nerves; deafness, tinnitus aurium, nystagmus, nausea and vomiting, disturbances of equilibrium, the fully developed picture resembling a severe type of Ménière's disease.

Multiple involvement of ganglia is by no means infrequent.

D. K. HENDERSON.

**TABETIC DYSPEPSIA.** (*Essai sur la dyspepsie tabétique.*) R. (414) LEFORT, *Thèses de Paris*, 1914-15, No. 55.

THE thesis contains the histories of 24 cases, 4 of which are original. The writer's conclusions are as follows:—

1. Tabetic dyspepsia may occur in the intervals between the gastric crises or in their complete absence, both in cases where the patient is already tabetic, and as a prodromal sign before he has already become so.
2. Tabetic dyspepsia assumes four different clinical forms—(i.) early cramps, (ii.) late pains, (iii.) flatulence, (iv.) atony.
3. The dyspepsia seems to be due to a gastric arrhythmia—due to an upset of equilibrium between the vagus and the sympathetic.
4. The diagnosis is difficult.
5. The prognosis is that of tabes.
6. The treatment is merely symptomatic. J. D. ROLLESTON.

**CASE OF TUBERCULOSIS OF THE AUDITORY APPARATUS;  
(415) INTERNAL HYDROCEPHALUS; PERMANENT DRAINAGE  
OF THE LATERAL VENTRICLE.** C. E. WEST, *Brit. Journ.  
Child. Dis.*, 1915, xii., p. 171.

A GIRL, aged 2½ years, underwent a radical mastoid operation for left otorrhœa and left facial paralysis in May. Early in July a facio-hypoglossal anastomosis was performed, but without any effect upon the paralysis. On 15th July she suddenly developed complete right hemiplegia with signs of chronic meningitis. The meningeal symptoms passed away, but the hemiplegia persisted. On 20th October convulsions, mainly right-sided, occurred, and unconsciousness. The following day a large temporal flap was turned down, and the whole of the left squama removed. An enormously dilated lateral ventricle was found and punctured. The fluid was allowed to run away slowly, the dura replaced, but not sutured, and the scalp wound closed. Considerable improvement followed, and the wound healed well in spite of much tension and bulging. On 3rd November the fits recurred, and on 11th November the scalp bulge was pierced by a long needle armed with a No. 3 twist silk, the needle being passed right across the bulge, and brought out through the skin beyond the edge of the old incision. An immediate passage of fluid took place along the threads. The œdema gradually subsided, and the child has since been in excellent health, and regained some power in her right limbs.

Inoculation of guinea-pigs and rabbits proved the tuberculous nature of the lesions. J. D. ROLLESTON.

- EXPERIMENTAL INVESTIGATIONS ON THE CEREBRO-SPINAL**  
(416) **FLUID IN CARBON DIOXIDE, ARSENIC, AND LEAD-POISONING.** (Experimentelle Untersuchungen über das Verhalten des Liquor cerebro-spinalis bei Kohlenoxyd-, Arsen- und Bleivergiftung). J. ROTHFELD and S. v. SCHILLING-SIENGALEWICZ, *Neurol. Centralbl.*, 1914, xxxiii., Juli 1, S. 803.

THE experiments were conducted on dogs.

1. In carbon dioxide poisoning the fluid shows lymphocytosis, a positive globulin reaction, and a raised cryoscopic index. There is always a leucocytosis in the blood.

2. In arsenical poisoning there is a slight lymphocytosis in the fluid. The globulin reaction is positive. Arsenic cannot be recovered from the fluid. There is always a leucocytosis in the blood.

3. In acute lead poisoning no change is discoverable in the cerebro-spinal fluid. The blood shows a leucocytosis.

S. A. K. WILSON.

- LAVAGE OF THE SPINAL CANAL IN CEREBRO-SPINAL**  
(417) **MENINGITIS.** (Le lavage du canal rachidien dans la méningite cérébro-spinale.) C. AUBERTIN and H. CHABANIER, *Presse Méd.*, 1915, xxiii., p. 213.

DURING the present epidemic among the soldiers in camp near Paris, in most of the patients, especially those admitted in a comatose state, the spinal fluid on lumbar puncture was an extremely thick pus.

It therefore seemed advisable to evacuate more than the 40-50 c.c. usually withdrawn, and to remove as much as possible of the meningococci and of the disintegrated cells; in short, to carry out a lavage similar to that practised in cases of purulent pleurisy.

The danger of removing too much fluid at one time, and thus causing a sudden and severe decompression of the nerve centres, was obviated by withdrawing a moderate quantity (50-60 c.c.) of spinal fluid, and replacing it by an equal amount of normal saline (7.5 per 1,000 at 37° C.), which was allowed to escape after a few minutes. The process was repeated two or three times, and then 50 c.c. of antimeningococcic serum was injected.

The writers had performed lavage on fifty occasions without any bad results. Unlike the injection of serum, the lavage never caused any pain whatever. The temperature charts of the cases treated by serum and lavage combined did not differ appreciably from those of Netter, who used serum alone. As a general rule, the patients showed a more rapid recovery from coma, and a more rapid diminution in their headache, and, in a less degree, of their contractures, but, most of all, they showed a very rapid improvement in their general condition.

J. D. ROLLESTON.

**THE STUDY OF THE ETIOLOGICAL FACTOR IN SO-CALLED**  
 (418) **CEREBRO-SPINAL FEVER.** R. RONALDSON, *Lancet*, 1915, June  
 26, p. 1333.

THE paper deals with the examination of cases occurring in an epidemic at Reading. In the examination of the blood, cerebro-spinal fluid, etc., of those affected, the author found a Gram-negative diplococcus and a diphtheroid bacillus. He concludes that the causal organism undergoes various metamorphoses, and that what were hitherto considered different organisms are merely other forms in the life history of the one bacillus.

He suggests that an investigation of the gonococcus might lead to the same conclusion.

R. DODS BROWN.

**CEREBRAL ABSCESS FOLLOWING DILATATION OF THE**  
 (419) **BRONCHI.** (Contribution à l'étude des abcès du cerveau consécutifs à la dilatation des bronches.) R. GILBERT, *Thèses de Paris*, 1914-15, No. 46.

A RECORD of 3 cases in adults, including a personal one in a man, aged 37, who for the last 9 years had been suffering from chronic pulmonary disease with hæmoptysis, and was admitted to hospital with symptoms of meningitis. Lumbar puncture gave issue to a clear but not absolutely limpid fluid under great hypertension, with a marked increase of albumin and a considerable cellular reaction in which polymorphonuclears predominated, but with about one-third of the cells consisting of lymphocytes. A diagnosis was made of an acute attack of tuberculous meningitis occurring in pulmonary tuberculosis. Two days later the cerebro-spinal fluid showed an exclusive polynucleosis, and though no organisms were present, 30 c.c. of Dopter's serum were injected. Death took place the same day.

Post-mortem, the lungs showed emphysema, but no tuberculosis. The meninges were congested, and there were a few superficial abscesses. On section of the hemispheres there were about 50 abscesses varying in size from a pin's head to a hazel nut. A few abscesses were present in the cerebellum and pons. Similar lesions were found in the left lobe of the liver, spleen, and kidneys.

The writer's conclusions are as follows:—

1. Cerebral abscesses are among the gravest and most frequent complications of bronchiectasis. They are chiefly seen in fœtid bronchiectasis.
2. Like bronchiectasis itself, they are more frequent in adult life and old age than in children.
3. The abscesses are multiple and miliary. They present all the characters of pyæmic abscesses, whether they affect the brain

alone or are associated with abscesses in other organs (liver, spleen, kidneys).

4. Their multiplicity is due to microbial embolism.

5. Three clinical forms are described—(1) meningeal, (2) typhoid, and (3) fulminating or apoplectic.

6. The diagnosis is often difficult, especially in presence of meningeal signs with no history of a previous pulmonary disease.

7. The prognosis is hopeless, as the multiplicity of the abscesses contra-indicates surgical intervention.

8. Treatment can only be prophylactic. J. D. ROLLESTON.

**CEREBRAL HEMIPLEGIA, A SEQUELA OF DIPHTHERIA.**

(420) E. MURRAY AUER, *New York Med. Jour.*, 1915, ci., p. 956.

AUER alludes to the recent papers by Humphrey (*v. Review*, 1913, xi., p. 101), Rolleston (*ibid.*, p. 280), Leede (*ibid.*, p. 436), Hallé (*ibid.*, 1914, xii., p. 314), Sarteschi (*ibid.*, p. 372), Mollet (*ibid.*, p. 379), and others, and records a personal case in a woman, aged 28, who had a severe attack of diphtheria treated by antitoxin at the age of 10. In the course of the disease—the exact time could not be ascertained—she developed right hemiplegia and aphasia. The aphasia disappeared after several weeks, but the hemiplegia, though it improved sufficiently to allow her to walk, persisted, and contracture of the right wrist ensued. Shortly after she had her first convulsion, and has since had convulsions at varying intervals, and has much deteriorated mentally. J. D. ROLLESTON.

**CEREBELLAR SYNDROME.** W. F. SHALLER, *Journ. Nerv. and Ment. Dis.*, 1915, xlii., May, p. 270.

A CONSIDERATION of the symptomatology in cerebellar disease.

The more dependable symptoms are ataxia of the cerebellar type, asynergia, adiodochokinesis, and cerebellar catalepsy; falling symptoms and variations from the normal in the functional labyrinth tests, and the pointing reactions of Barany.

D. K. HENDERSON.

**THE ENERGY METABOLISM OF AN INFANT WITH CON-  
(422) GENITAL ABSENCE OF THE CEREBRAL HEMISPHERES.**

FRITZ B. TALBOT, *Arch. of Ped.*, 1915, xxxii., June, p. 452.

THE child was admitted to Massachusetts Hospital in October 1913. He was then 8 months old, could not sit up, hold his head up, or notice objects. He weighed then 7,250 grams. He was blind, the pupils were equal, and did not react to light. The

fundus showed optic atrophy with cupping of the discs. The Wassermann reaction was negative. He appeared to be deaf, but the reaction to touch was very rapid. Operation for relief of blindness in November 1913 "showed that the hemispheres of the brain were entirely absent, and replaced by cerebro-spinal fluid. At the base of the skull there were a series of nubs, none larger than a small walnut, the posterior of which represented the cerebellum; the optic nerve was recognised. About 8 oz. of cerebro-spinal fluid was removed and replaced with normal saline."

Some notes on the metabolism are given.

A. NINIAN BRUCE.

**AN ANGIOMA OF THE CEREBELLUM.** L. NEWMARK, *Journ. (423) Nerv. and Ment. Dis.*, 1915, xlii., May, p. 286.

THE case of a woman, aged 32 years, who gave a history of transitory attacks of pain in the back of her head, which eventually were accompanied by vomiting and diplopia. She also at times suffered from slight unconscious spells. The optic discs showed very slight blurring, and she had a lateral nystagmus. There was no ataxia, no adiadochokinesis, and no astereognosis. The knee-jerks, as well as the reflexes of the upper extremities, were constantly absent, while the Achilles reflexes could at all times be easily elicited. The autopsy showed a cyst-like collection of fluid about the middle of the posterior margin of the left cerebellar hemisphere. A horizontal section into the cerebellum at this place revealed a dark-red spherical tumour about the size of a pea. The tumour was made up almost entirely of capillary blood-vessels of various sizes.

D. K. HENDERSON.

**TUMOUR OF THE BULBAR OLIVE.** (*Tumeur de l'olive bulbaire.*) (424) DE MONTET and DE LA HARPE, *Soc. Vaudoise de Méd.*, 8 Mai, 1915. (*Rév. Méd. de la Suisse Romande.*, 1915, June 20, p. 343.)

A TYPICAL thalamic syndrome was produced in this case. Only one clinical examination was made by the writers (in 1911); patient died a year later. In 1908, paresis, hemianæsthesia, and pains on left side, with certain fleeting cranial nerve palsies. In 1910, athetotic movements of left hand; rubbing with paper gave an intolerable sensation. Examination in 1911 revealed: (1) Complete loss of deep and other sensibilities on left side: in places there was imperfect perception of painful and thermal stimuli; (2) left paresis, exaggerated reflexes, Babinski; (3) left ataxy; (4) slight contracture of left arm, with typical athetosis of left hand; (5) severe pain left side of body, "as if arms were being

twisted or squeezed by pincers"; fundi normal, no cranial nerve palsies; arterial pressure very high; no albuminuria; no syphilis. Necropsy: right inferior olive greatly increased in volume; its cells degenerated, but its structure largely preserved; it extended forwards to pons at level of exit of trigeminus, involving the sensory paths and compressing the pyramidal path; at its forward end there was a small vascular focus with extreme proliferation of the cells, suggesting a vascular endo- or perithelioma; proliferation of neuroglia. As to nature of tumour, the writers reject glioma, and doubt its being a case of heterotopia with secondary vascular transformation. "The vascular focus must be primary, the olivary swelling secondary." No diseased foci were found in the cerebellum or thalamus. The production of athetosis by a lesion situated so low down is exceptional. The writers regard it as an instance of morphological modification "à distance."

LEONARD J. KIDD.

**PARALYSIS OF THE TONGUE DUE TO DIVISION OF BOTH**  
(425) **HYPOGLOSSAL NERVES.** (Paralysie de la langue par section des deux nerfs grands hypoglosses.) MORESTIN, *Soc. de Chirurg. de Paris*, 23 Juin, 1915. (*Presse Médicale*, 1915, July 1, p. 244.)

EIGHT months ago a soldier was wounded by a bullet which passed from one side to the other in the infra-hyoid region. His tongue is completely paralysed, without any cicatrices: its surface and contour are intact. On palpation, no induration; indeed, it is uniformly very supple and flaccid. Taste and lingual tactile sensibility are perfect. The tongue appears to take no part in the act of swallowing. Saliva is swallowed with great difficulty, and the patient slobbers constantly. He can speak slowly, with a sticky voice, but is quite easily understood. No change has occurred during five months' observation, and prognosis is held to be very bad. Fortunately, the patient bears his distressing affliction splendidly. The affection is attributed to division of both hypoglossal nerves by the bullet.

LEONARD J. KIDD.

**MULTIPLE NEURITIS AS A COMPLICATION OR SEQUEL OF**  
(426) **TYPHOID FEVER.** T. A. CLAYTON, *Amer. Journ. Med. Sci.*, 1915, cxlix., p. 706.

CLAYTON has collected 26 cases, including a personal one in a man, aged 42, following a severe attack of typhoid fever. 19 were males, 6 females, in 1 the sex was not mentioned. The first symptom noted was in 14 instances pain, in 3 failing vision, in 2 paræsthesia, in 1 each hyperæsthesia, paræsthesia, swelling of the limbs.

difficult speech, rigidity of joints, anæsthesia, and increased reflexes.

In 14 cases the symptoms appeared in the course of the fever, and in 12 after it had subsided. The earliest was in the second week of fever. Pain was present in 17, absent in 9. There was altered sensation in 19, no change in 4, and no mention of the condition in 3. Paralysis occurred in 25, and in 1 it was not mentioned. The reflexes were lost in 9, exaggerated in 4, diminished in 2, normal in 1, and not noted in 1. Contractures were absent in 20, and present in 6. The cranial nerves were involved in 7, and not affected in 19; the spinal were affected in 24, unaffected in 2, in 4 both were affected. 14 cases showed atrophy, 2 none, and in 10 no mention of the condition was made. The duration of the disease in cases which recovered was from 3 to 14 months.

Complete recovery took place in 11, improvement in 7, death in 2, and in 6 the result was not recorded. J. D. ROLLESTON.

**TYPHOID POLYNEURITIS IN A PATIENT TREATED WITH**  
(427) **INJECTIONS OF SERUM-RUM.** (*Polynévrite dothiénentérique chez un malade traité par les injections de sérum-rhum.*)  
V. COURTELLEMONT, *Bull. et mém. Soc. méd. Hôp. de Paris*, 1915, xxxix., p. 397.

A PREVIOUSLY healthy soldier, aged 23, had a very severe attack of typhoid fever, complicated by broncho-pneumonia. In convalescence he developed polyneuritis of all four limbs, but most marked in the lower limbs. The disturbances were chiefly motor and pseudo-tabetic, with affection of objective sensation, disorders of the reflexes and electrical reactions, and vaso-motor phenomena, without pain or sphincter trouble. Almost complete recovery took place in three months.

The patient had received fifteen injections of serum-rum in the course of his illness, each injection consisting of 250 c.c. The quantity of rum in each injection never exceeded 12.5 c.c., so that the writer does not consider this treatment as in any way responsible for the polyneuritis.

J. D. ROLLESTON.

**SOME NEW SYMPTOMS IN AMAUROTIC FAMILY IDIOCY.**  
(428) ISADOR H. CORIAT, *Boston Med. and Surg. Journ.*, 1915, clxxiii., July 1, p. 20.

AMONG phenomena which have been either completely overlooked or only briefly described in amaurotic family idiocy, Coriat mentions:—(1) Explosive laughter, seen in 3 cases. Mental



deterioration was marked in 2 of these. It is uncertain whether the laughter is a sign of mental deterioration or is due to some thalamic lesion. (2) Hydrocephalus, in 1 of his own cases and in a few others. (3) Bulbar symptoms in 1 case, viz., saliva drooling, choking spells, difficulty in swallowing, and dyspnoeic attacks. Sudden death occurred from bulbar paralysis. (4) Nystagmus. Constant lateral and rotary in 3 cases; in 1 it persisted throughout the whole illness. (5) Hypotonia, in 2 cases. The marked flaccidity of limbs resembled that of Oppenheim's amyotonia congenita. It was previously recorded by Kowarsky. (6) Abnormal reflex phenomena: increased reflex reactions to sound, light, and tactile stimuli. On plantar stimulation, tremor of that leg or a contralateral knee-jerk. Pathological irradiation of reflexes is invoked to explain these phenomena, and their resemblance to the reflex phenomena of strychnine poisoning is pointed out.

LEONARD J. KIDD.

**A NEO-SALVARSAN FATALITY.** G. E. BROWN, *Urol. and Cut.* (429) *Review*, 1915, xix., p. 378.

A MAN, aged 23, suffering from secondary syphilis, was given an intravenous injection of neo-salvarsan, and a second six days later. Four days after the second he was seized with severe chills, fever, and sweating. A little later he became delirious, and about an hour afterwards comatose. Lumbar puncture showed increased pressure and a slightly cloudy fluid. Convulsions developed and continued for five hours, until death occurred in one. The autopsy showed intense congestion of the cerebral meninges and minute hæmorrhages beneath the arachnoid. The brain was otherwise negative. The thoracic and abdominal organs were negative. This is the only bad result which the writer had among 240 intravenous injections, salvarsan and neo-salvarsan having been given about an equal number of times.

J. D. ROLLESTON.

**SEVERE CASE OF INTRACTABLE SYPHILIS, TREATED SATIS-  
(430) FACTORILY WITH HECTINE.** FRENCH and MILLS, *Lancet*, 1915, June 26, p. 1338.

THE patient had been treated with mercurial pills, injections of salvarsan, neo-salvarsan, and mercurial cream, but without any benefit. Subcutaneous injections of hectine were given, and he began to improve immediately. With further treatment the improvement became most marked, and he was considered cured.

The composition of hectine is Sodii Benzo-sulpho-p-aminophenyl-arsenas.

R. DODS BROWN.

**DEATH FOLLOWING LUMBAR PUNCTURE.** (*Un cas de mort à (431) la suite de ponction lombaire*). BLONDIN and A. SÉNÉCHAL, *Bull. et mém. Soc. de méd. de Paris*, 1915, p. 172.

A SOLDIER, aged 26, was wounded in the head by a bomb on 18th April, but apart from headache and a slight degree of torpor he presented no symptoms. An operation was performed the following day, when several splinters of bone were removed. All went well till the 26th, when he complained of headache. On the 30th, as the headache had become more severe, lumbar puncture was performed in the sitting posture, and 15 c.c. of lemon-coloured clear fluid were removed under hypertension. A few minutes later he became comatose, and died in a quarter of an hour. The autopsy showed an extra-dural clot involving the periphery of the right cerebral hemisphere, and on section of the brain an organising clot occupying the apex of the right temporo-sphenoidal lobe. The cerebral substance was definitely destroyed, not merely pushed on one side.

There was œdema of the lungs and kidneys.

The authors attribute the death to the extensive cerebral destruction and hæmorrhage acting like a cerebral tumour. The lumbar puncture was not the real cause of death, though it may have hastened it.

J. D. ROLLESTON.

**INFLUENCE OF DI-IODOTYROSINE AND IODOTHYRINE ON (432) THE SECRETION OF CEREBRO-SPINAL FLUID.** CHARLES H. FRAZIER and MAX M. PEET, *Amer. Journ. Physiol.*, 1915, xxxviii., p. 93.

THYROID extract slows the rate of secretion of the cerebro-spinal fluid. Iodothyrene, a commercial derivative of the thyroid gland, in solution, injected intravenously, has little influence on the rate of cerebro-spinal fluid secretion when given in small amounts (0.05 gm.). In amounts of 0.3 gm. and 0.5 gm. there is some inhibition of the rate of choroid plexus secretion, but not as marked as that produced by saline extracts of fresh thyroid or by di-iodotyrosine, a synthetic substance closely related to the iodine complex of the thyroid gland. These cause a decrease in the rate of secretion, appearing usually in the first half-hour after injection, most marked with the fresh thyroid extract.

A. NINIAN BRUCE.

**THE USE OF MAGNESIUM SULPHATE IN THE TREATMENT (433) OF TETANUS.** S. J. MELTZER, *Lancet*, 1915, June 26, p. 1330.

THE author refers to the administration of magnesium sulphate by subcutaneous, intramuscular, intravenous, and intraspinal injection.

He describes a special apparatus devised by himself for pharyngeal insufflation, which method he considers the most reliable for those cases requiring artificial respiration. By this means efficient doses of the salt can be given.

R. DODS BROWN.

**ON AN ABNORMAL FORM OF TETANUS COMPLICATING**  
(434) **LAPOROTOMY FOR INTESTINAL PERFORATION.** (*Sur une forme anormale de tétanos compliquant une laparotomie pour perforation intestinale.*) A. SCHWARTZ and A. MOULONGUET, *Paris méd.*, 1915, v., p. 110.

A SOLDIER, aged 26, had his small intestine perforated in two places by a piece of shell. The wounds were sutured eleven hours later, and an injection of antitetanic serum in the right thigh was given the same day. The subsequent progress, local and general, was excellent until five days after the operation, when symptoms of tetanus appeared in the left quadriceps, and in a few days became generalised. The abdominal wound gave way, and death took place on the fourteenth day, eight days after the onset of tetanus.

It was uncertain whether death was due to affection of the bulbar nuclei by the tetanus toxins or to heart failure.

J. D. ROLLESTON.

**A FORM AND COLOUR TEST OBJECT FOR PERIMETRIC WORK.**  
(435) L. C. PETER, *Archives of Ophthalmol.*, 1915, xliv., July, p. 416.

PETER'S test object consists of a handle carrying a mechanism enabling a series of discs, both white and coloured, to be exposed singly at the will of the observer. The instrument provides altogether twenty different test objects from  $1\frac{1}{2}$  to 10 mm. in diameter, and is intended for use with the campimeter, though it may also be used with the arc perimeter. Such instruments of necessity expose the test object in a relatively large framework, capable of reflecting glints of light, and this defect renders their advantage over simpler appliances very doubtful.

H. M. TRAQUAIR.

**CONGENITAL DIVISION OF THE OPTIC NERVE AT THE BASE**  
(436) **OF THE SKULL.** C. N. SNEAD, *Archives of Ophthalmol.*, 1915, xliv., July, p. 418.

IN this case the right optic nerve about 6 mm. in front of the chiasma, was found to divide into an internal larger and an external smaller portion. Near the eyeball the two divisions joined to form an apparently normal optic nerve. The divided part was 6 mm. long, and each portion had a complete connective

tissue sheath. The author thinks it probable that the isolated strand represented the uncrossed bundle. Reference is made to the rarity of the condition, and to three previously reported cases.

H. M. TRAQUAIR.

**CLINICAL AND EXPERIMENTAL INVESTIGATIONS ON THE**  
(437) **ETIOLOGY OF HETEROCHROMIA.** J. BISTIS, *Archives of Ophthalmol.*, 1915, xliv., July, p. 433.

SEVERAL observers have noted symptoms of paralysis of the cervical sympathetic on the side of the paler iris in cases of heterochromia of the irides. The author excised the superior cervical ganglion in four rabbits, and found a change in the colour of the iris of that side in three cases after two to four months. Adrenalin produced mydriasis, but cocaine did not. Histologically, diminution of the pigmentation and new formation of fibrillary connective tissue in the stroma were found with other changes suggesting an inflammatory process. The author considers the conclusion justified that paralysis of the cervical sympathetic is the cause of the heterochromia.

H. M. TRAQUAIR.

**PSYCHIATRY.**

**NATURE AND TREATMENT OF GENERAL PARALYSIS.** (Nature  
(438) *et traitement de la paralysie générale.*) G. MARINESCO, *Neurol. Centralbl.*, 1914, xxxiii., Dez. 1, S. 1234.

IN this review Marinesco declares it is conclusively proved from recent work that tabes and general paralysis can no longer be considered metasyphilitic; they are instances of actual "syphilosis" of the cord or brain as the case may be. He holds that no hard and fast line can be drawn between general paralysis and cerebral syphilis, histologically speaking, and that cases where the lesions of syphilis and of parasymphilis (so-called) co-exist are frequent. He quotes two cases of his own showing this. Again, in experimental syphilis in the rabbit, similar results have been obtained. Instances of conjugal syphilis not infrequently point in the same direction. Marinesco does not believe in a special variety of the syphilitic virus which is neuro-toxic, but holds that soon after syphilitic infection, both the blood and the cerebro-spinal fluid are invaded by the spirochaete. As neither of these is in reality a suitable medium for the cultivation of the organism, the latter has to fight for its existence, especially if energetic treatment is undertaken. Some may resist and gradually develop, according to the site

which they happen to occupy, cerebral or spinal syphilis, or, later, tabes or general paralysis. He thinks that the successful spirochæte acquires secondary properties after it invades the nervous system. These properties, however, are neither permanent nor unalterable. No one has shown that the virus obtained from the brain of general paralytics, injected into the rabbit, produces lesions which are exclusively limited to the central nervous system.

S. A. K. WILSON.

**THE CLINICAL USEFULNESS OF LANGE'S GOLDSOL REACTION IN PSYCHIATRY.** (439) **TION IN PSYCHIATRY.** (Zur klinischen Brauchbarkeit der Lange'schen Goldsolreaktion in der Psychiatrie.) KARL ESKUCHEN, *Neurol. Centralbl.*, 1914, xxxiii., Sept. 1, S. 1026.

THE author, from an examination of two hundred cases, agrees with those who have found this reaction more sensitive than any of the so-called "four reactions" in the examination of syphilis of the central nervous system. He gives the details for its employment.

S. A. K. WILSON.

**POST-OPERATIVE NERVOUS AND MENTAL DISTURBANCES.** (440) JOSEPH M. AIKIN, *Amer. Journ. Med. Sci.*, 1915, cxlix., May, p. 715.

THE author states that it is questionable if the term post-operative insanity has any just claim as a clinical entity in medical literature. "Were we to balance the evidence in which surgery established relief from nervous and mental disorders against that proving it the direct cause of them, I think the advantages from the wise exercise of surgery would far exceed the disadvantages it may precipitate."

D. K. HENDERSON.

**CASES OF HYPOTHYROIDISM.** ROBERT ARMSTRONG-JONES, *Proc. Roy. Soc. Med.*, 1915, viii., June (Sect. of Psychiat.), p. 17.

SIX cases are described. The first two were of myxœdema with insanity, and both recovered under thyroid treatment. A third case of myxœdema developed tachycardia, and had to discontinue the thyroid treatment; some improvement followed later on resuming the treatment. A fourth case of myxœdema only slightly improved under thyroid. A fifth case showed no improvement, thyroid treatment causing attacks of faintness. The last case suffered from congenital weak-mindedness with melancholia, and had a mongoloid appearance.

A. NINIAN BRUCE.

**THE DUCTLESS GLANDS IN 110 CASES OF INSANITY, WITH  
(442) SPECIAL REFERENCE TO HYPOTHYROIDISM. M. KOJIMA,  
*Proc. Roy. Soc. Med.*, 1915, viii., June (Sect. of Psychiat.), p. 21.**

THE ductless glands examined were obtained from 110 consecutive autopsies at Claybury Asylum.

The average weight of the thyroid gland in the insane is generally smaller than the normal. Thus the average weight is 16.46 gm. in the male and 16.87 gm. in the female; in 12 per cent. of the male and 18 per cent. of the female the thyroid glands were under 10 gm. Considerable variations in the weight are found among the female cases about the climacterium, and in many female cases of affective psychosis the thyroid was very large. The weights of the external parathyroids vary from 0.01 gm. to 0.7 gm. In 21.9 per cent. of the cases four glands were found. The average weight of the pituitary body is 0.56 gm. in the male and 0.62 in the female. In the female cases in which the thyroid glands were small the pituitary was generally large. The weight had no relation to the nutrition of the body nor to the form or duration of the insanity. The average weight of the pineal gland of the adult is 0.167 gm. in the male, and 0.198 in the female. There is no difference corresponding to any particular disease. The adrenals of the male are, generally speaking, heavier than in the female. No definite conclusions can be arrived at regarding the weight of the reproductive glands in mental disease, but in certain female cases, where the thyroid gland was small, the ovaries were also small.

The systematic microscopic examination of all the ductless glands in four cases of the above series excludes the probability that changes in any other ductless glands than the thyroid can be held accountable for the mental symptoms and the histological changes found in the central nervous system.

A. NINIAN BRUCE.

**MICROSCOPIC EXAMINATION OF THE CENTRAL NERVOUS  
(443) SYSTEM IN THREE CASES OF SPONTANEOUS HYPOTHYROIDISM IN RELATION TO A TYPE OF INSANITY.  
F. W. MOTT, *Proc. Roy. Soc. Med.*, 1915, viii., June (Sect. of Psychiat.) p. 58.**

THE clinical notes of these three cases are given in Kojima's paper (*v. supra*). They were all cases in women of middle age about the climacterium. A universal chromatolytic change in the cells of the central nervous system was found, sparing no system or group of neurones entirely (*v. Review*, 1913, xi., p. 482). The changes were very marked in the bulb, especially in the vagus and glosso-pharyngeal nuclei.

The main object of this communication is to show that there is a type of insanity occurring in women about the climacterium, in which a manic-depressive condition, associated with mental confusion, hallucinations, delusions mainly of persecution, loss of memory of recent events, and terminating in dementia, may arise as a result of a particular form of hypothyroidism. This hypothyroidism is characterised by an atrophy of the glandular structure of the thyroid, interstitial fibrous hyperplasia, and abundant infiltration of the same with lymphocytes; a condition of chronic inflammation arising from a toxic condition, probably local in its source, as the adjacent parathyroids show no such change. There is usually an increase in weight of the pituitary gland, and abundant colloid in the *pars intermedia*, which may be regarded as evidence of thyroid insufficiency.

The perinuclear chromatolysis found in hypothyroidism is not specific, but also occurs in lead encephalitis, alcoholic psychosis, and following section of the axis cylinder process. The chromatolysis in hypothyroidism is probably the result of the absence of thyro-iodine in the blood, and of the presence of a toxic condition of the blood altering the osmotic membrane of the nerve cells, and leading to the imbibition of water.

A. NINIAN BRUCE.

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## Reviews

**TREATISE OF NERVOUS SEMIOLOGY.** (*Tractado de Semiotica* (444) *Nervosa. Semiotica das formas exteriores e das desordens motoras.*) ALOYSIO DE CASTRO (Rio de Janeiro). Pp. xix. + 506, with 235 figures in the text, some coloured. 1914. F. Briguier & Cia, Rio de Janeiro.

THIS work stands out prominently among the numerous treatises which have appeared in connection with this subject for two reasons—firstly, on account of its general excellence; and secondly, because it is the first important contribution on this subject from South America. No one could read this book without being impressed by its great clearness and precision. It is divided into two parts.

The first part deals with the semiology of external forms, and describes the various modifications which different parts of the body may undergo in nervous diseases. It discusses in turn the changes found in the face, hand, foot, thorax, and back. Special attention is paid to the study of the attitudes as seen in paralysis

agitans, tabes, the myopathies, Friedreich's disease, etc. All these points are illustrated very clearly by numerous original photographs. The principal innovation in the book, however, and one which distinguishes it from other books of a similar kind, is the illustration of the chapter on gait by a series of cinematograph reproductions, showing the nature of the gait in organic hemiplegia, tabes, beri-beri, pseudo-hypertrophic paralysis, paralysis agitans, Friedreich's disease, and many other conditions. Many of these are extremely instructive, and make it possible to analyse the movements without difficulty and in great detail. Attention is also directed to the different tracks of the foot-prints in these conditions.

The second part, which occupies more than three-quarters of the book, is concerned with the semiology of motor disturbances, and we find described in succession different types of contractures, catalepsy, hypotonia, convulsions, spasms, functional dyscinesias, tics, tremors, choreas, myoclonias, athetosis and syncinesias. These are also all well illustrated, cinematograph representations being again utilised in connection with Sydenham's and Huntington's chorea and various tics.

There then follows a large and important section on the semiology of different forms of paralysis, cerebral, spinal, peripheral, and functional, profusely illustrated, clearly described, and accompanied by diagnostic tables and schemes. Most of the important signs are demonstrated, together with the best way of eliciting them. With the exception of a few coloured diagrams, the illustrations are entirely clinical, and have obviously been chosen with great care. The value of the book is still further enhanced by the presence of an extensive list of references to the literature, which is arranged at the foot of each page, and there is a good index at the end of the volume. The type is large and easy to read.

The many contributions of the author to clinical neurology, such as the sign of Negro in facial diplegia, the gait in beri-beri, the presence of associated movements in athetosis, etc., are all incorporated here, and still further emphasise the original character of the book.

The simplicity and clearness of the text, the numerous and carefully chosen illustrations, and the whole general arrangement of the volume, together with the extensive bibliography and the ease with which any required point may be elicited and understood, all tend to mark this work out as one of the best and most original of recent contributions to this department of neurology, and one which should prove of great interest and assistance to all neurologists, and which should also do much to add to the reputation of the South American school.



**DISEASES OF THE NERVOUS SYSTEM**, for the General Practitioner (445) and Student. ALFRED GORDON. Second edition, revised and enlarged, with 169 illustrations, many coloured. Pp. xiv.+618. Royal 8vo. 1914. H. K. Lewis, London. Pr. 17s. net.

THE fact that this book has now reached a second edition is probably the best proof that it fulfils the purpose for which it was written, namely, to supply a plain and practical account of diseases of the nervous system. A brief account of some of the more important points in connection with the anatomy and physiology of the central nervous system is first given, followed by a chapter on methods of examination. Cerebral localisations are then discussed, and the different nervous diseases are described under the headings of diseases of the brain, basal ganglia, cerebellum, medulla, pons, and fourth ventricle, spinal cord, peripheral nervous system, and sympathetic system, with a chapter upon functional nervous diseases, and another upon intoxications.

The aim of the author has been to present nervous diseases from a practical standpoint, but the importance of an understanding of the pathological process at work is fully recognised, and therefore a short description of the pathology of each condition is given, while the relationship between the symptoms and the pathological changes is explained. Each form of organic or functional nervous disease is also discussed from the standpoint of differential diagnosis, and the course of the disease, its mode of termination, prognosis, and etiology are carefully considered. Special attention has been paid to treatment, most of the established drugs, operations, and appliances being described, while those whose therapeutic value is still uncertain are omitted or only just mentioned.

In this, the second edition, almost all the chapters have been enlarged and numerous additions made, including articles upon the following subjects: fracture of the skull, concussion of the brain, lumbar puncture, cerebro-spinal fluid, Wassermann reaction, radiculitis, and psychoanalysis, while the administration of antimeningococcus serum, salvarsan, and other recent advances in treatment have been included.

A large amount of information has been compressed into this volume, and renders it a specially suitable textbook for the general practitioner who wishes to have a work of reference to which he can refer for the essential points of the pathology, symptomatology, pathogenesis, etiology, and treatment of nervous diseases.

**CARCINOMA OF THE THYROID IN THE SALMONOID FISHES.**

(446) HARVEY R. GAYLORD and MILLARD C. MARSH. Publications from State Institute for the Study of Malignant Disease. Serial No. 99. Issued April 22nd, 1914. 127 Figs. Government Printing Office, Washington, U.S.A.

AN account is here given of an investigation and experimental study on the above subject, conducted jointly by the Gratwick Laboratory of the State Institute for the Study of Malignant Disease, Buffalo, New York, and the United States Bureau of Fisheries.

The disease known as gill disease, thyroid tumour, endemic goitre or carcinoma of the thyroid in the Salmonidae was first noted in 1883 by Bonnet, and is a malignant neoplasm. It occurs in fish living under conditions of freedom in populated areas. When introduced into fish-breeding establishments it becomes endemic, with occasional epidemic outbreaks. Normal fish taken from the wilderness may be made to acquire the disease when placed in fish-breeding establishments where the disease is endemic. The feeding of uncooked animal proteid favours, and the feeding of cooked animal proteid retards the disease as compared with the uncooked. Feeding alone is not an efficient cause. It must be combined with an agent transmitted probably through the water or food, or both.

By scraping the inner surface of water-soaked wooden troughs in which the disease is endemic, an agent may be secured which from its action upon the mammalian thyroid, when administered through drinking water, is no doubt the cause of the disease in the fish confined in these troughs. The agent is destroyed by boiling. Fish in all stages of the disease are favourably affected in the direction of cure by the addition to the water supply in suitable concentration of mercury, arsenic, or iodine. The effect of these is probably the expression of a therapeutic relation of these elements to carcinoma.

Certain species have an almost complete natural resistance to the disease, while certain fish of susceptible species show a high degree of immunity. Spontaneous recovery occurs in a considerable percentage of individuals. Removal from ponds in which the disease is endemic to natural conditions, or a change to more natural food, increases the percentage of spontaneous recoveries. Spontaneous recovery appears to confer a degree of immunity against recurrence. The incidence of the disease increases with the age of the fish, at least up to five years.

Thyroid enlargement and changes presenting at the end of five months a picture of diffuse parenchymatous goitre were induced in mammals by giving them water to drink in which

had been suspended scrapings from troughs in which the disease is endemic. The occurrence of the disease in wild fish, its introduction into fish-cultural stations, its localisation in certain troughs or water supplies, the method of its spread, its transmission to mammals, the efficacy of three well-known inorganic germicides in the treatment of the disease, the destruction of the agent by boiling, the phenomena of spontaneous recovery and immunity, strongly indicate that the agent causing the disease is a living organism. In many of its phases the disease is identical with endemic goitre. As there is no line of demarcation between what is called endemic goitre, and what the authors believe they have clearly shown is cancer of the thyroid, they hold that endemic goitre and carcinoma of the thyroid in the Salmonidæ are the same thing.

The monograph is beautifully illustrated, the tumour mass, together with the various metastases, being shown in coloured plates of the head of the fish, while the figures illustrating the structure of the thyroid are profuse and admirably reproduced.

C. B. BURR.

**A HANDBOOK OF PSYCHOLOGY AND MENTAL DISEASE.** (For (447) use in Training Schools, for Attendants and Nurses, and in Medical Classes, and as a Ready Reference for the Practitioner.) C. B. BURR. Fourth edition, revised and enlarged. Pp. viii. + 235, with 10 illustrations. F. A. Davis Co., Philadelphia. 1914. Pr. \$1.50 net.

THE importance of the study of normal psychology for the understanding of mental disease is becoming more and more recognised every day. The author here devotes the first part of the book to a description of the fundamental points and principals of psychology, especially in its relation to mental diseases. He then discusses symbolism in sanity and insanity, this chapter representing a new section which has not appeared in previous editions. It is written in an interesting manner, and shows how very widely symbolism is used in everyday life. The subject of insanity is then considered. The author states that the causes of insanity may be classified for convenience, approximately, as follows:—(a) Direct physical causes, 36 per cent.; (b) indirect physical and emotional causes, 8 per cent.; (c) vicious habits, 25 per cent.; (d) constitutional and evolutionary causes, 28 per cent. He then describes in turn the different forms of insanity, notes on treatment being introduced as far as possible, and includes chronic nervous exhaustion (neurasthenia) under the heading of the exhaustion psychoses. A brief psychological analysis is

given where suitable, and illustrative case described. The last two chapters deal with the management of cases of insanity from the medical standpoint, and from the nursing standpoint, and contain much useful information.

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Collected Contributions, 1914: (a) Psychopathic Hospital (Department of the Boston State Hospital), 1914'1-1914'29. Whole numbers, 35-63; (b) State Board of Insanity, 1914'1-1914'14. Whole numbers, 21-34. Issued 1915. Boston, Mass., U.S.A.

# Review of Neurology and Psychiatry

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## Original Articles

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### FACTORS WHICH DETERMINE THE CALIBRE OF NERVE CELLS AND FIBRES.

By LEONARD J. KIDD, M.D.

1. *Introduction* ; 2. *Theories and Histological Observations* ;  
3. *Discussion* ; 4. *Conclusions*.

#### 1. INTRODUCTION.

ALTHOUGH more than seventy years have passed since Bidder and Volkmann discovered<sup>1</sup> that the sympathetic nervous system is characterised by the presence of a vast preponderance of slender nerve fibres, yet there does not appear to have been any attempt to make exact histological observations on the calibre of nerve cells and nerve fibres until Schwalbe<sup>3</sup> published his small monograph in the year 1882. But in spite of the fact that much careful histological work has been done since that year by many workers, certain points have been missed and certain errors have been made, mainly because most of those observers who have worked on mammals have neglected the study of lower vertebrate forms, and *vice versa*. I suppose that we all believe that the saying, "if law be anywhere, it is everywhere," is in the main true. When we come to think over the question, then, we recognise at the outset that the factors which determine the calibre of nerve cells and fibres must have been in operation in invertebrates and in the lowest

vertebrates for long ages before the higher vertebrates appeared. The ideal way, then, to study the subject would be to begin at the beginning and work up from the lowest invertebrates through higher forms up to the vertebrate groups, but the task of reviewing the chief histological observations which have been made on the nervous system of invertebrates is quite beyond my powers, so I must leave it to those who are better equipped. But we do know the broad fact that large dendrites and large cell-bodies are characteristic of the neurones of invertebrates. From this fact alone we learn at the outset of our inquiry that these two characteristics are of enormous antiquity in the evolution of the nervous system of animals. We shall see presently that Bevan Lewis reached substantially the same conclusion by approaching the subject at the very opposite end of the animal scale, viz., by his histological study of the cerebral cortex of Man.

There are certain general statements which have been made which may be conveniently mentioned now. Thus it is said that the larger an animal is the greater is the calibre of its nerve cells and fibres. But though this is true for some forms, it is quite untrue for others; it cannot, therefore, be of any real value in the attempt to solve the problem. Again, it has been claimed that the calibre depends on the kind of work which the neurone performs. Although there is some truth in this statement, most writers who have adopted it have not, in my opinion, quite arrived at the exact nature of this factor. It has also been quite seriously taught that the calibre of motor nerve cells and fibres depends partly on the length of the fibres and partly on the size of the muscles which they innervate; both statements are demonstrably erroneous, as I shall show presently. It is said that the nerve fibres which innervate the slowly acting red muscles of the rabbit are smaller than the fibres which supply the more highly differentiated white muscles. This fact is of prime importance, as I hope to show. There appears to be in many instances, in mammals at any rate, a fairly definite size-relationship between motor nerve cells and their axons: thus the cell usually has a maximum diameter about six times as great as that of its axon. To take one instance. Alex. Hill \* describes the largest cells of the human oculomotor nucleus

\* Alex. Hill, article on "The Anatomy of the Intra-Cranial Portion of the Visual Apparatus." Norris and Oliver's "System of Diseases of the Eye," Philadelphia and London, 1900, Vol. i., p. 401.

as being of about  $100\ \mu$  in diameter. And Wakelin Barratt<sup>7</sup> gives the calibre of the largest fibres of the human oculomotor nerve as varying from  $11$  to  $15\ \mu$  (Schwalbe's measurements are almost exactly similar to Barratt's). But although it is true for mammals that as a rule relatively large nerve cells give origin to relatively large nerve fibres, and relatively small nerve cells to relatively small nerve fibres, yet we have a very different state of affairs in at least one of the *cyclostomes*. Clearly, therefore, we are not justified in making the unqualified statement that the calibre of a nerve fibre depends on the calibre of the nerve cell which gives origin to it. To go slightly beyond the subject-matter of this paper, one may add that there are several difficult unsolved problems concerning the question of the size-relationship of the dendrites to the two other parts of the neurone; many large cells have many thick dendrites, but this is not an invariable rule. There is also the question of the number of muscle fibres to which a single nerve fibre is distributed; but the variations are here, in mammals at any rate, so great that I feel that no useful purpose would be served by discussing it. Then there is the most interesting question of the total cubical content of the dendrites, cell-body, and axon of a neurone. It seems clear that there cannot be any constant relationship between the cubical content of, at any rate, the nerve cell and its axon. One instance will make this clear. A pyramidal fibre which ends round a cell of the lumbar enlargement of the human spinal cord must have a much greater cubical content in relation to the giant cell of the precentral gyrus of the cortex cerebri which gives origin to it (Page May and Gordon Holmes,<sup>17</sup> 1909) than has a pyramidal fibre which goes to the cervical enlargement of the cord to its giant cortical cell of origin. But, whatever may be the correct solutions of all these puzzling problems, on one thing we can all agree, viz., that the size of every neurone and of its constituent parts is, in all vertebrates, exactly adapted to the special amount and kind of work which it is called on to perform: to deny this would be to call Nature a blunderer.

## 2. THEORIES AND HISTOLOGICAL OBSERVATIONS.

Of the theories already mentioned, those which teach that the calibre of nerve cells and fibres depends on the size of the animal, the length of the fibres, and the size of the muscles which they

innervate, will be found to have been destroyed by the exact studies detailed in the histological section of this paper. The theory of the nature of the work performed by nerve cells or fibres will be considered in my formal discussion.

In 1876 Hughlings Jackson<sup>2</sup> offered some speculations on the question of the relationship between the size of the cortical nerve cells of Man and the size of the muscles (or, as he preferred to term them, the movements) over which they preside. He wrote these words in a footnote: "Hitzig and Ferrier's points of excitation, that is to say, the subordinate motor centres, have many very large cells. I should, for theoretical reasons, expect that of the subordinate centres, those which represent movements in small muscles (eyes, face, and hands), will have cells comparatively small—smaller than the cells superintending the movements of the large muscles of the limbs, but not so small as the cells of the very highest centres." In a later paper (1881) Jackson went a step further, and wrote thus: "I have also suggested that small muscles, or more properly, movements which require little energy for the displacements they have to effect (those of the face and hands in touch, for example), are represented by small cells. Such movements are rapidly changing during many of the operations they serve in—writing, for example—and require repetitions of short liberations of energy, and necessitate quick recuperation of the cells concerned. Movements of the upper arm are, in comparison, little changing, and require persistent steady liberation of energy. That small muscles are represented by small cells is *not altogether a mere hypothesis*."\* The masterly researches of Bevan Lewis seem to me to show that those parts of Hitzig and Ferrier's region which especially represent small muscles have *most* † small cells. Truly such reasoning leaves us unsatisfied.

In 1882 Schwalbe<sup>3</sup> published his monograph on the calibre of the nerve fibres supplying the limbs of the frog; he also added a short account of some histological observations which he made on the diameter of the human eye-muscle nerves, which agree very nearly with the later observations of Wakelin Barratt<sup>7</sup> (1901). Schwalbe concluded that the thickest nerve fibres going to the frog's limbs had the longest course. It was his observations which

\* The italics are mine. Jackson evidently refers here to cortical representation.

† The italics are mine.



led to the erroneous teaching that the diameter of a motor nerve cell and the calibre of its axon depend on the length of the course which the axon has to traverse before it reaches its muscle.

In 1888 Shore<sup>4</sup> published two important papers on the vagus nerve of lower vertebrates. In his first paper, which deals with the anatomy and development of the vagus nerve in *Petromyzon* and in *Selachians*, he reached the interesting conclusion that the ramus lateralis of the vagus "is of extreme ancestral origin, and is equivalent to the lateral strands in the nerve plexus of *Nemertea*, to the main nervous system of *Annelida* and *Arthropoda*, and possibly also to the nerve-ring of *Cœlenterata*." His second paper deals mainly with the vagus nerve of the skate, but to some extent also with the vagus of other *Elasmobranchs*. In the roots of the spinal nerves of the skate he found that their fibres were of two kinds, viz., (*a*) large medullated, varying in calibre from 17 to 25  $\mu$ , and (*b*) small medullated, ranging from about 2 to 8  $\mu$ . He found that "the great bulk, though not all, of the fibres in the ramus lateralis are of the large medullated kind," and he adds that "the fibres of the lateralis are on the average larger than those of a typical spinal sensory nerve root, the former averaging 25  $\mu$ , the latter about 20  $\mu$ ."

In 1889 Gaskell,<sup>5</sup> writing on the relation between the structure, functions, distribution, and origin of the cranial nerves, &c., gave a large number of histological measurements of the calibre of the cranial nerve fibres and nerve roots of a large collie dog. The ventral roots of the cervical nerves contain (*a*) a preponderance of large medullated fibres, varying from 14·4 to 19  $\mu$  "or larger"; (*b*) smaller ones; (*c*) a few fine fibres (3·6 to 5·4  $\mu$ ). The ventral roots of the third, fourth, and fifth lumbar, and of the first sacral nerve resemble the cervical nerve roots in these respects. One point, which he describes and figures, seems to me to be very significant, and I will refer to it in my discussion—he found that the fibres of the phrenic nerve are small when compared with the very large fibres of the neighbouring fourth cervical root. The spinal accessory nerve contains (*a*) a large fibred part (14·4 to 18  $\mu$ ), and (*b*) a smaller fibred part. The largest fibres of the hypoglossal nerve are not larger than 7·2 to 10·8  $\mu$ . The third cranial nerve root within the cranium contains (*a*) large medullated fibres whose calibre varies from 14·4 to 18  $\mu$ , and (*b*) small medullated fibres of about 3 to 5  $\mu$ . The large fibres of the fourth cranial nerve vary

from  $14.4$  to  $18\mu$ , the small ones from  $3.6$  to  $5.4\mu$ . The sixth cranial nerve is composed mainly of thick medullated fibres, varying from  $14.4$  to  $18\mu$ , and also a very few slender medullated fibres. The seventh cranial nerve presents features of great interest—its largest fibred rootlets are mostly composed of the motor fibres of the facial muscles: these nerve fibres are of uniform size, and measure about  $10.8\mu$  in calibre. There are also a large number of medullated fibres of  $7$  and  $8\mu$ , and a very few slender fibres. Gaskell found also in the roots of the seventh nerve a small group of thick fibres ( $16$  to  $18\mu$ ) whose destination he failed to trace. But Mr Waggett, who investigated this point further for him, succeeded in showing that these thick fibres do not supply the stapedius muscle, “and do not leave the main trunk until nearer the exit of the facial from the bone.” (There seems to be no doubt that they supply the stylohyoid and posterior digastric muscles, as Edgeworth’s later work on the dog (1899) proved.) Finally, Gaskell found that the roots of the ninth and tenth cranial nerves are composed mainly of small fibres ( $1.8$  to  $3.6\mu$ ), with some larger ones (up to  $10.8\mu$ ).

In 1889 Bevan Lewis<sup>6</sup> published his text-book on mental diseases, in which he has a most interesting discussion on the question of the various factors which determine the diameter of nerve cells and the calibre of nerve fibres. He gave reasons why it is not possible to accept Meynert’s view that the great size of the giant cells of the precentral convolution is solely due to the greater depth of the cortex of this gyrus. Lewis pointed out that in the cortex cerebri we find that a constant accompaniment of increasing bulk of nerve cells is the element of much more complex relationships with surrounding cell districts. “In other words, the larger the cell the greater the number of its branches. But the older the nerve cell, the longer time has it had for the establishment of organised relationships around; and hence it follows that the older cell is also the larger element.” On pp. 107 and 108 Lewis connects the varying size of cortical cells with the varying distances which their axons have to travel to reach their related spinal centres. An examination of the measurements which he gives shows that he believed that the smaller cortical cells govern the smaller muscles of head, neck, arms, &c. But we now know that this is not the case (May and Holmes,<sup>17</sup> 1909). Lewis formulates his conclusions that “the dimensions of these cells in the

cortex are influenced by (1) range of discharging distance, (2) size of musculature involved, (3) age of the nerve cell, and (4) the resulting multiplicity of cell connections." His first two conclusions have been proved to be wrong: his second two are unquestionably correct. And everlasting credit is due to him for his insight into these two latter factors.

Soon afterwards (1890) Hughlings Jackson<sup>2</sup> eagerly seized hold of Bevan Lewis's histological researches, as they seemed to him to confirm the accuracy of his own speculative suggestion made in 1876 and 1881, as to small movements being presided over by small cortical cells. He wrote thus: "The 'leg' centre contains many large cells, but it also contains some small cells. Bevan Lewis's researches, to which I am very greatly indebted, show that the parts of the motor region representing small muscles have most small cells. He says (and this bears on the remark I made on the leg centre) that 'alongside the largest pyramidal cells are numbers of others of the *smallest* dimensions' (italics in original), so that the discharging lesion of the leg centre *may be* \* made up of small cells." But on p. 738 Jackson definitely hazards the unhappy guess that small movements are innervated by small cells of the Rolandic cortex, "and very many small cells."

During the last fifteen years I have on several occasions heard one of Hughlings Jackson's disciples say, with all the bland uncritical trustfulness that characterises your true disciple in all departments of human life, that Jackson's teaching on this point received striking confirmation from the histological work of Alexander Bruce,<sup>9</sup> who showed that the cells of the ventral horn of the first thoracic segment of the human spinal cord, which innervate the small intrinsic muscles of the hand, are of small size. A reference to p. 15 of Bruce's work will show clearly that he did not claim that his histological findings confirmed Jackson's theory. Now, if the disciple had done a moment's wholesome comparative anatomical thinking, he would have grasped the elementary truth that the intrinsic muscles of the human hand share with a part of the intrinsic muscles of the tongue the glory of being the most specialised and the youngest phylogenetically of all the striped muscles of man. In other *primates* these intrinsic hand muscles begin to become of much importance; but, in order to see how great an advance these muscles reach in man, we have only to point to the extraordinary fineness of the small, exact movements made by the seamstress, artist, and artificers of all kinds in their daily work. The real reason why these tiny muscles are innervated by small fibres which come from small spinal cells is because they are young muscles which

\* The italics are mine.

carry out quite recently acquired movements. And let us all realise that not only do fibres of the pyramidal tract which preside over large movements of the limbs rise in giant cortical cells, but also those which preside over the smallest movements of the limbs, including those of the tiny, phylogenetically young, intrinsic muscles of the hands. And let us note the fact that May and Holmes' accurate experimental and pathological research<sup>17</sup> proves that in man, chimpanzee, monkey, lemur, dog, and cat, giant precentral cortical cells can and do preside over the movements effected by very large, large, medium, small, and even pygmy-sized muscles.

In 1898 Wakelin Barratt<sup>7</sup> published his first histological paper on the vagus nerve of man. His results correspond closely with those obtained by Gaskell on his large collie dog. Thus Barratt found that the large medullated fibres of the human vagus vary in calibre from 8.7 to 12  $\mu$ , the small medullated from 3.5 to 7  $\mu$ , and the non-medullated from 1 or 2 to 4  $\mu$ . The point of special interest is that the largest vagus root fibres of Gaskell's large dog were only 10.8  $\mu$  in calibre; thus the vagus of the larger animal (man) has the larger fibres. In 1899 Barratt studied the ninth, tenth, eleventh, and twelfth cranial nerves of man. The glossopharyngeal nerve is made up of small medullated fibres, mostly 4  $\mu$  in diameter. The fibres going to the sternomastoid muscle are mostly large, about 12  $\mu$  in diameter. Those of the pharyngeal branch of the vagus vary from 4 to 12  $\mu$ ; those of the superior laryngeal branch are chiefly large (12  $\mu$ ), but there are also a few small medullated fibres of 4 to 6  $\mu$ . The medullated fibres of the hypoglossal nerve are from 6 to 12  $\mu$  in diameter.

In 1899 Edgeworth<sup>8</sup> gave us the most exhaustive histological study that has ever been made on the calibre of the cranial nerves and their roots and branches. He worked on mongrel English terrier dogs, and supplemented his histological work by an embryological study carried out mainly on the common toad and partly on the rabbit. He seems to have been either the first, or one of the first, observers to point out that the maximum size of a mammalian nerve was somewhat less the more distal the section was made. Thus the ophthalmic division of the trigeminus nerve just beyond the Gasserian ganglion contained fibres up to 17.6  $\mu$  in diameter, but in the various branches of that division no fibres of greater diameter than 16.8  $\mu$  were seen. The three eye-muscle nerves contain medullated fibres up to 16  $\mu$ . Most of the small medullated fibres of the third cranial nerve (*i.e.*, those under 4  $\mu$ )

go to the ciliary ganglion, but each extrinsic ocular muscle receives small as well as large medullated fibres. The study of the trigeminus nerve brought out the following facts, many of which had not been discovered previously: (A.) *Sensory Branches*.—These fall into two categories: (1) those which contain medullated fibres up to  $16\mu$ , (2) those which contain medullated fibres up to  $11.2\mu$ . Among the large-fibred group are the long ciliary, ethmoidal, infra-orbital, and lachrymal branches of the ramus ophthalmicus; the subcutaneous malæ, infra-orbital (both dental and cutaneous branches), palatinus major, and nasalis posterior branches of the ramus maxillaris; the auriculo-temporal, buccal, terminal branches of mylohyoid to skin, and the mental and dental branches of the inferior dental branch of the ramus mandibularis. (2) Those which comprise the smaller-fibred group of trigeminus branches are found in the palatinus minor of the ramus maxillaris; the lingual, orbital gland branches of buccal, and the parotid gland branches of the auriculo-temporal branch of the ramus mandibularis. (B.) *Muscular Branches*.—These nerve fibres also fall into two groups, viz., (1) those which contain medullated fibres up to a maximum diameter of  $16\mu$ , and (2) those whose maximum reaches only  $11.2\mu$ . Among the larger-fibred group are the branches to the temporal, masseter, pterygoids, and anterior digastric muscles. Among the smaller-fibred group are the nerves to the tensor tympani, tensor palati, and the mylohyoid muscles. The facial nerve contains (1) medullated fibres of all diameters up to  $11.2\mu$ , and (2) a few large ones up to  $16\mu$ . The branch to the posterior digastric and stylohyoid muscles contains fibres up to  $16\mu$ . The chorda tympani branch contains medullated fibres of various diameters up to  $11.2\mu$ , but the smaller fibres are far the more numerous. The great superficial petrosal nerve contains medullated fibres up to  $11.2\mu$ . Edgeworth specially notes that it is a very small nerve, and contains very few fibres.

The great significance of this fact seems to have escaped the attention of all writers but myself. There is a certain school of clinical neurologists who pretend to believe that the taste fibres in man, which convey taste impulses centrally from the anterior two-thirds of the tongue, after reaching the geniculate ganglion, pass peripherally down the great superficial petrosal nerve, and thence by the Vidian nerve and sphenopalatine ganglion, and thus reach the ramus maxillaris trigemini, pass through the Gasserian ganglion, up through the afferent trigeminus root, and finally reach the cephalic extremity of the nucleus

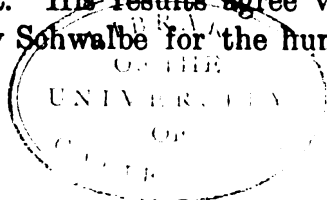
gustatorius. Now we know that in man and all other vertebrates taste fibres pass centrally from the palatal taste-buds, up this tiny nerve,\* to the cells of the geniculate ganglion in which they rise. There is also some highly suggestive clinical evidence that in man this small nerve conveys secretory fibres to the lachrymal gland either from or through the geniculate ganglion. Unless, therefore, the great superficial petrosal nerve of man be very much larger than the dog's, it is highly improbable that this tiny nerve could pack away all the many taste fibres which travel centrally up the chorda tympani from the tongue. And if this nerve gave passage to taste fibres from the tongue, we should have this anomalous condition present, viz., that whereas taste impulses from the palate pass centrally up this nerve, those from the tongue pass peripherally down the same nerve! A curious arrangement, to say the least. And let us not forget that even small dogs, such as those Edgeworth used, have a very large lingual surface from which taste fibres would have to pass by their tiny great superficial petrosal nerve.

In addition, Edgeworth found that all the branches of the facial nerve, except the chorda tympani, contain non-medullated fibres: the root of the nerve does not. He found that the roots of the ninth, tenth, and medullary part of the eleventh cranial nerve contain medullated fibres of various sizes up to  $11.2\ \mu$ . One of the upper rootlets of the vagus contains larger fibres, up to  $16\ \mu$ ; and "these larger fibres, together with a few grey ones, pass off just below the jugular ganglion as the auricular branch of the vagus." The roots of the spinal part of the eleventh cranial nerve contain medullated fibres of all sizes up to  $16\ \mu$ : so also does the external branch of the eleventh nerve. The recurrent laryngeal contains very few grey fibres, and also medullated fibres up to  $11.2\ \mu$  in diameter. The upper rootlets of the hypoglossal contain medullated fibres of all sizes up to  $11.2\ \mu$ ; the lower rootlets contain medullated fibres up to a maximum of  $16\ \mu$ . The maximum fibres in the descendens noni (in geniohyoid branch) are of  $16\ \mu$  diameter; in all other branches of the hypoglossal nerve the maximum size is  $11.2\ \mu$ . Edgeworth summarises the muscular branches of the cranial nerves thus: (1) Those containing all sizes up to  $16\ \mu$ ; (2) those containing all sizes up to  $11.2\ \mu$ . The larger-calibred fibres are found in the three eye-muscle nerves (to the extrinsic ocular muscles); in the trigeminus branches to temporal, masseter, pterygoids, and anterior

\* In 1849 Stannius taught that the great superficial petrosal nerve of mammals is homologous with the ramus palatinus of fishes. About forty years ago Huxley adopted this view, and to-day apparently all morphologists accept it.

digastric muscles; in the facial branch to the posterior digastric and stylohyoid muscles; in the hypoglossal branches to the geniohyoid, thyrohyoid, and anterior portions of the sternohyoid and sternothyroid; and in the branch of the eleventh spinal to the sternomastoid and the trapezius muscles. The smaller-fibred group are found in the branches to the mylohyoid, tensor tympani and tensor palati; in the branches of the seventh nerve to the facial muscles and the stapedius; in the branch of the ninth to the stylopharyngeus; in the vagus branches to the palatoglossus, palatopharyngeus, constrictores pharyngis, azygos uvulæ, and levator palati; in the branches of the medullary eleventh to the laryngeal muscles; and in the hypoglossal branches to the genio-glossus, hyoglossus, and the intrinsic muscles of the tongue. After a careful comparison of his histological studies with the results of his embryological work, Edgeworth reached the conclusion that "the maximum diameter of the nerve fibres, both motor and sensory, passing to any structure, is dependent on the morphological position of that structure, and not on the nature of the impulses carried by them." Twelve years later he published an important paper on the morphology of the muscles of the head. In 1899 he had described the intrinsic muscles of the tongue as being of branchial origin. But in 1911 he taught that the twelfth cranial nerve "is somatic (it innervates the hypo-branchial spinal muscles and the lingual muscles derived from the geniohyoid)." On p. 309 he speaks of the branchial muscles as being somatic in origin. He writes: "The small size of the nerve fibres of the lingual muscles is curious, but the muscles, though somatic in origin, have intimate relations to a splanchnic epithelium." In my discussion I will give what I believe to be the correct interpretation of this curious fact mentioned by Edgeworth.

In 1901 Wakelin Barratt<sup>7</sup> recorded his histological observations on the three eye-muscle nerves of man. He found that the third nerve, both in the cavernous sinus and in the various branches of its upper and lower divisions, consists of large medullated fibres of 11 to 15  $\mu$  diameter, and small medullated of 3 to 5  $\mu$ . The fourth nerve is composed mostly of large medullated fibres of 12 to 19  $\mu$  diameter, and a few small medullated of 4  $\mu$ . The sixth nerve contains medullated fibres ranging from 11 to 17  $\mu$  for its largest fibres, and from 3 to 6  $\mu$  for its smallest. His results agree very nearly with the measurements given by Schwalbe for the human



eye-muscle nerves: if anything, Schwalbe gives slightly the smaller measurements. It is curious that Barratt should have found that the superior oblique muscle should receive the largest nerve fibres going to extrinsic ocular muscles, and that the external rectus muscle receives larger nerve fibres than any of the extrinsic muscles supplied by the third nerve.

In 1902 Dr Elizabeth Hopkins Dunn<sup>10</sup> made a careful study of the nerve fibres supplying the leg of the frog (*Rana virescens brachycephala*—Cope). She reached the important conclusion that the largest nerve fibres at each level of the sciatic nerve run the shorter\* course, while the largest fibres which innervate tissues more remote from the spinal cord are of less diameter.

In the same year C. Judson Herrick,<sup>11</sup> writing on the significance of the size of nerve fibres in fishes, states that in *Menidia*† the eye-muscle nerves contain both typical coarse motor fibres, and also very fine fibres: the latter terminate on a different set of muscle fibres. He concluded that the size of the nerve fibres is evidently correlated with the size of the muscle fibres to be innervated. This observation he has verified on several other bony fishes, e.g., cod, gold-fish, and cat-fish. He finds that, as a general rule, though by no means invariably, in fishes the large muscle fibres are innervated by large nerve fibres, and the small muscle fibres by small nerve fibres, irrespective of the length of the nerve fibres. He refers specially to the very large size of the nerve fibres (the largest in the body) which innervate the organs of the lateral line of fishes. He points out that in many fishes these organs are reduced in size, and presumably in functional importance: their essential sensory cells, the hair cells, are specially reduced. As a rule, these reduced organs, no matter on what position on the body they occur, and hence however long or short are their nerve fibres, are supplied by much smaller nerve fibres than are the large and highly functional organs of the same fish. Herrick concludes that "there is, in some cases at least, a correlation between the diameter of the nerve fibres and the functional importance of the fibre, or the physiological importance of its terminal organ as compared with other organs of the same system."

\* The italics are mine.

† Herrick's work on *Menidia* was done in the year 1899 (*Journ. Comp. Neurol.*, ix.).



In 1906 Boughton<sup>13</sup> studied the increase in the number and size of the medullated fibres in the oculomotor nerve of the white rat and of the cat at different ages. In the case of the white rat, he found that "all the medullated fibres continue to increase in size during the life of the animal, but the newer fibres, classed as 'small,' and first recognised at fifteen days, never attain the size of the older ones, and indeed, at two years of age, they are not so large as some of the older fibres were at fifteen days. This appears to be due to the fact that they come in after the period of most rapid growth." Boughton also adds that "at any age at which the two groups of 'large' and 'small' fibres can be distinguished, all the fibres are increasing in diameter at the same rate." He examined the oculomotor nerves from six cats (a mother and her five kittens): the animals ranged in weight from 112 gm. (one day old) to 2,893 gm. (thirteen years). From his conclusions I select two: "After the oculomotor nerves in the cat and rat have reached the same stage of medullation (the cat of one day corresponding to the rat of ten days), the addition of medullated fibres during subsequent growth in the case of the cat is relatively twice as great as in the case of the rat." Also: "The medullated fibres continue to increase in size during the life of the animal, but the newer fibres, classed as 'small,' never attain the size of the older ones."

In 1908 Johnston<sup>15</sup> wrote a paper of great interest, but full of difficulty, on the significance of the calibre of the parts of the neurone in vertebrates. It was based on his study of the peripheral nerves of the brook lamprey, "a slender fish not more than 150 mm. in length": its nerve fibres are non-medullated: and this six-inch lamprey possesses "large motor fibres which are equal in diameter to the largest medullated fibres in man. The bodies of the motor cells in the spinal cord are usually not greater in diameter than the largest motor fibres at the point where they enter the muscles." As far as I know, all higher vertebrates differ from the brook lamprey in this respect; mammals certainly do. Another very striking peculiarity is that of "the great increase in thickness of the motor fibres between their cells of origin and the muscles which they innervate. This increase is greatest in the spinal nerves which supply the myotomes. These fibres begin as cones of origin, averaging about  $2\ \mu$  in thickness, decrease to less than  $1\ \mu$ , and increase again before leaving the spinal cord to about

3  $\mu$ . They eventually reach a diameter of 20 to 24  $\mu$  as they enter the muscles." Johnston found in one instance an increase of thickness from 9 to 19  $\mu$  in a distance of 0.3 mm. The increase of the calibre of the fibre, seen in all the motor cells, was least marked in those going to branchial muscles. The calculation is made that each motor fibre of the spinal nerves must supply about 100 muscle fibres. It is of interest to note that the neuromast fibres (acoustico-lateralis system) are, next to the motor fibres, the thickest in the body. On the question of the calibre of peripheral sensory fibres, Johnston points out that in the lamprey the fineness of visceral sensory fibres, which is a fairly constant character in vertebrates, reaches an extreme. The cutaneous fibres vary considerably in calibre. Also the fibres supplying the taste organs in the pharynx are coarser than the general visceral fibres; and the fibres of the velar nerve are much finer than the average fibres of the trigeminus going to the skin. He discusses at some length the question of the number of muscle fibres supplied by each nerve fibre. Although the question is probably one of great importance, yet it can hardly be said that at present we possess much evidence that can help us to understand it. In mammals, for instance, the variations in this respect are very great. On *a priori* grounds we should expect that there is always a definite relationship between the total cubical content of any muscular neurone and the size and weight of the muscle fibre or fibres which it innervates.\* It is, I think, important to bear in mind the fact mentioned by Johnston, viz., that the movements of the adult lamprey consist chiefly in wriggling, sucking, rasping, and breathing. What seems to me the most puzzling fact of all in his paper is not discussed by him at all. It is this: How are we to interpret the fact that the fibre of a motor spinal cell of about 20 to 24  $\mu$  diameter begins as one of about 2  $\mu$ , then diminishes to 1  $\mu$  or less, and then again increases to 3  $\mu$ , and all this before it leaves the spinal cord? As if that were not puzzling enough, we find it going on increasing in calibre, and sometimes leaping almost suddenly from 9 to 19  $\mu$ , and finally reaching the size of its parent spinal cell of origin as it enters the

\* There are several papers, chiefly by American writers, on this subject, which I have read, such as those by Dr Elizabeth Dunn, and by Donaldson and Hoke. But I have not taken notes from them, because I felt, rightly or wrongly, that they do not throw any clear light on the question of the factors which determine the calibre of nerve cells and fibres. Three papers by these writers will be found in the *Journal of Comparative Neurology* for 1899, 1905, and 1909.

muscle. One might possibly understand a steady, gradual, and regular increase of calibre, so that the whole fibre would resemble a tapering stick whose butt end was directed peripherally. There appears to be no other instance of this very peculiar arrangement in higher vertebrates. Dr Elizabeth Dunn,<sup>10</sup> and also Edgeworth,<sup>8</sup> show that in the frog and dog respectively, nerve fibres taper very slightly from centre to periphery. We may here note that in the lamprey the spinal motor cell is about twelve times the diameter of the most proximal part of its fibre, whereas the largest oculomotor nuclear cell of Man is only some six times as large as the largest fibre of the oculomotor nerve (it is true that the latter measurement is taken some distance peripheral of the oculomotor nucleus). The only suggestion I have to offer on these puzzling features in the lamprey—and I am sure it only partly meets the difficulties—is that the large spinal motor cells of the brook lamprey are in reality pygmy cells when they are considered in relationship to the enormous area of the distribution of their fibres in the muscles. And I offer the further suggestion that this relatively small size of the lamprey's motor spinal cells is functionally associated with the slowness, sluggishness, and simplicity of the animal's muscular movements.

A few months ago Bartelmez<sup>19</sup> published a valuable and most suggestive paper on "Mauthner's Cell and the Nucleus Motorius Tegmenti." His work was done mainly on brains of *Ameiurus* and other *Teleosts*, both larval and adult. He refers to the Müller's cells of *Cyclostomes* as being merely the largest cells of the nucleus motorius tegmenti: they give rise to the giant Müller's fibres. In *Teleosts* these are the largest axons found in the medulla oblongata, with the exception of the Mauthner's fibres. The nucleus of Mauthner's cell is small in comparison with the cytoplasm, and the same thing is true of the Müller's cell. In the typical form of Mauthner's cell Bartelmez finds two gigantic dendrites and several smaller ones. He finds as many as *at least twelve*\* different types of fibres having endings in the pericellular net of Mauthner's cell—the chief connections of the cell are with the vestibular nerve and its nuclei; most of the other fibres come from the acoustico-lateral nuclei, the fasciculus longitudinalis medialis, and the tecto-bulbar system. The nucleus motorius tegmenti is primitively a co-ordinating mechanism for

\* The italics are mine.

the motor apparatus of the bulb and cord. In the *Cyclostomes* there is a pair of enlarged Müller's cells at the anterior eighth level in exactly the same position as the *Teleostean* Mauthner's cells, differing from the latter chiefly in that the axons are crossed. Mauthner's cell is part of a three-neurone reflex, consisting of an acoustic ganglion cell, Mauthner's cell, and a motor cell of the ventral horn. Bartelmez holds that it is this reflex which enables the animal to keep perfect control of its equilibrium in the most rapid and intricate movements. "We find the system most highly developed in the *Teleosts*, whose tail swimming is *ne plus ultra*. If, as Edinger and others have taught, Mauthner's cell were part of the general tonus reflex, it is hard to see why it should have been so intimately related to the tail-muscle nuclei as to disappear as soon as the tail is lost in the *Anuran amphibia*." Bartelmez goes on: "It is by no means necessary, however, that Mauthner's cell be concerned only in equilibratory reflexes. It has been said that most of the root fibres which end about Mauthner's cell are thick fibres. Mullenix<sup>18</sup> (1909) has found that some 'giant' fibres end in every crista and macula of the internal ear, and I would interpret such fibres as paths of relatively low resistance, *i.e.*, the fibres concerned in the most rapid reflexes. Now, according to Beccari<sup>14</sup> (1907), the lateral dendrite is related exclusively to saccular fibres in *Salmo*, and in *Ameiurus* certainly some fibres from the macula sacculi end upon the lateral dendrite. It may well be, then, that Mauthner's cell is concerned in the characteristic auditory reflex in *Teleosts* described by Parker<sup>16</sup> (1908). This is a 'sudden jump forward' after strong auditory stimulation. The course of such a reflex might be outlined thus: From the giant fibre endings in the macula sacculi, which latter Parker has shown to be sensitive to auditory stimuli, *via* the ganglion and posterior eighth root to the lateral dendrite; thence by way of Mauthner's fibre to the motor nuclei of the tail muscles."

### 3. DISCUSSION.

It will be convenient to begin with those factors on which the calibre of nerve cells and fibres does not depend. I have already shown the error of Hughlings Jackson's theory. Not only do small cells of the human cortex not innervate the movements

effected by small muscles, but they do not innervate any movements: all movements performed by limb muscles in man are innervated by giant cells of the precentral cortical gyrus, the smallest movements just as much as the largest. And we have seen that the calibre of nerve cells and fibres does not depend on the size of the animal: in proportion to its size a small animal may have giant cells and fibres, and a large animal may have pygmy cells and fibres. Again, the calibre of a nerve cell or fibre does not depend on the length of the course which the fibre has to traverse to reach its peripheral tissue: in man an eye-muscle nerve has a total course of only some 3 or 4 in., and a fibre going to a muscle of the leg has one of from 2 to 3 ft. in a tall man. Although the largest eye-muscle nerve fibre is slightly smaller than the largest nerve fibre supplying a leg muscle, it would appear that the calibre of the former is something like ten times greater in relation to its length than is the case in the nerve fibre supplying the leg. And the calibre of a purely muscular\* nerve fibre does not depend on the size of the muscle which it innervates. In the dog the thickest muscular nerve fibres are those going to the limb muscles (about  $24\ \mu$ ): the thickest eye-muscle nerve fibres are from 15 to  $19\ \mu$  in diameter, and Edgeworth<sup>8</sup> found that the latter are the same size as the nerve fibres which innervate the non-limb portion of the trunk supplied by the spinal nerves. Now it is probable that the huge thigh muscles of a dog or man are many hundreds of times larger and heavier than their tiny eye muscles. Clearly, then, if there were any relationship between the calibre of a muscular nerve fibre and the size and weight of its muscle, either (a) the eye-muscle nerve fibres are hundreds of times too big, or (b) the nerve fibres supplying the huge thigh muscles are hundreds of times too small. It is also certain that in mammals, at any rate, the calibre of a nerve cell or fibre does not depend on the number of muscle fibres which it innervates: the variations are so great that this element is not worth discussion. But it is possible that the total cubical content of a muscular neurone may have a constant relationship to the total cubical content of the muscle-mass which it supplies: this question seems to be worthy

\* All "purely muscular" nerves which have been scientifically examined by the experimentalist or the clinician (when their muscles are capable of strong compression) have been proved to contain afferent fibres. There is no such thing as a "purely motor" nerve.

of study. And although Edgeworth's work is highly suggestive (in all but one particular) of the accuracy of his conclusion that the morphological position of a structure is the factor which determines the calibre of its nerve fibres, yet one cannot quite accept it as correct. I will take the one weak spot in his case—he can give no satisfactory explanation of the small size of the largest nerve fibres going to the tongue muscles. Now what do we know of the tongue in vertebrates? First of all, there is now almost general agreement amongst professional comparative anatomists that the so-called tongue of *Cyclostomes* is homologous with the lower jaw of *Gnathostome* vertebrates. In fishes the tongue is rudimentary and lacks a proper musculature. The tongue begins to advance somewhat in amphibians, especially in *Anura*. In reptiles its mobility increases, notably in the chameleon. In birds the tongue presents usually a poor muscular development. In mammals the intrinsic tongue muscles become important, and reach a high state of differentiation in man: they play a great part in the highly specialised acts of speech and mastication. I attribute the relatively small size of the largest nerve fibres which go to the tongue muscles of man and higher mammals to the fact that the tongue is, although an ancient organ, quite a young one when we consider the vast antiquity of the earliest vertebrates in which it is either absent or but poorly developed as a mobile organ.

Two of the factors which unquestionably do really play an important part in determining the calibre of nerve cells and fibres were enunciated by Bevan Lewis,<sup>6</sup> viz., the age of the cell, and the complexity of its dendritic connections. It is of great interest that he arrived at these two memorable discoveries by a study of the human cerebral cortex. For though there are in fishes the beginnings of a cortex, which progresses gradually in higher vertebrates, yet the cortex of even lower mammals is vastly less developed than that of higher mammals. And, in any case, the giant cells of the precentral gyrus, which we now know give origin to the fibres of the pyramidal tract (May and Holmes,<sup>17</sup> 1909), are, from a phylogenetic point of view, "mere mushrooms of yesterday." And, even if we accept as evidence of the existence of *Mesozoic* mammals the discovery of the teeth of a tiny marsupial-like animal in secondary deposits—evidence which many palaeontologists refuse to accept as conclusive—we see that mammals do not go very far back in vertebrate history. But, although

Bevan Lewis ran considerable risk in attributing age to any large cortical cell in man, yet he clearly grasped the fact that these cortical cells have very rich dendritic relationships with other cortical cells. And in the case of these giant cortical cells it is the latter factor, and not their age, which determines their large size. As a matter of fact, I do not think anyone can point to any large young cell which has not a very extensive dendritic connection. Thus, while old cells are always large cells, and young cells usually small cells, yet a young cell may be a large cell. There are great numbers of old nerve cells and fibres which are very large. To begin with, the neurones of invertebrates have very large dendrites and cell bodies. Then the large size of the fibres of the acoustico-lateralis system of fishes and aquatic amphibians is well known. Then we have Mauthner's giant fibres coming from the giant cells of the nucleus motorius tegmenti of fishes. Among nerve tracts which consist of large old nerve fibres we can point to the dorsal longitudinal bundle and the rubro-spinal tract. And we have the giant nerve fibre which supplies the electric organ of the African *Malapterurus electricus*. This fibre rises in a single enormous nerve cell situated in the region of the second cervical nerve. The antiquity of all these neurones just mentioned is obvious. Motor nerve cells which innervate striped muscles are mostly large, and give origin to large nerve fibres. The ganglia of the cerebro-spinal dorsal roots contain many very large cells and also many small cells: the latter are now known to give origin to visceral afferent fibres. Many of the cells of these ganglia are cutaneous afferent (sensory) in function: these cells are mostly large, and they are also mostly old. How are we to explain the large size of the relatively young giant cells of the human precentral cortex? Is their rich dendritic inter-neuronic relationship sufficient by itself to explain it?

The following is my suggestion: We must first of all grasp the elementary morphological truth that all neurones developed in the dorsal zone of the embryonic neural tube—including the dorsal half of the pars intercalaris, the "schalt-stück" of His—are afferent; and all those developed in the ventral zone are motor. Now not only are the dorsal roots and dorsal horns developed in the dorsal zone, but also the cells of Clarke's column, the nuclei of the dorsal columns of the bulb, the cerebellum, thalamus proper, corpus striatum, corpora quadrigemina and geniculata, and the whole of the cerebral cortex. The pyramidal tract, then, is an afferent tract which rises in afferent cortical cells: it

ends round afferent cells of the dorsal horn (von Monakow, Schäfer, and others); from these afferent dorsal horn cells a fresh neurone sends its axon to end round a true motor ventral horn cell. Similarly, the vestibulo-spinal tract is an afferent tract: it rises in the cells of one of the four vestibular afferent reception nuclei (Deiters' nucleus). The whole of the cerebro-spinal nervous system is nothing more nor less than a series of afferent-to-motor neuronic loops which begin peripherally in skin or muscle, &c., or sense organ, and ultimately find their way out by true motor tracts, such as the rubro-spinal, to the motor nuclei of cranial nerves and ventral horn cells to striped muscle, and also *via* the ganglia of the vegetative nervous system to unstriped muscle. And the precentral gyrus of man and higher apes is not motor, nor sensori-motor, but is wholly non-sensory-afferent. Since the cortex cerebri of man and higher mammals has a much richer and larger cortico-cortical association system than that of lower mammals or sub-mammalian vertebrates, and in addition receives a larger number of afferent (cortico-petal) impulses from all the many afferent neurones of all parts of the body situated behind the telencephalic segment from which it is itself derived, we must think of it as literally overcharged with a superabundance of afferent impulses. This is one of the reasons, I believe, why the precentral gyrus is electrically excitable. Another reason is doubtless that the younger a neurone is the more unstable is the physico-chemical constitution of its protoplasm. But though the pyramidal tract, and also the vestibulo-spinal tract, is afferent, it is intimately concerned in motor processes. But where is the afferent tract or fibre or cell which is not? There is no such thing anywhere as a crude "motor" process or "motor" centre. All "motor" processes have an afferent component, and they always begin on the afferent side, just as in the original evolution of the earliest and simplest nervous system the afferent preceded the motor in time. The large size of a giant precentral cortical cell depends, then, on (1) the enormous number of afferent impressions which reach it from its own cortical segment, and (2) the vast number of similar impressions which enter the cortex from other afferent cell groups, such as the thalamus, cerebellum, and the dorsal cell groups of the spinal cord, &c.

How are we to interpret the relative slenderness of visceral nerve fibres? It is clear that some, at any rate, of the visceral fibres are very old, so that we cannot attribute their slenderness solely to youth. I believe that it must be attributed to the fact that visceral reactions are of a simpler and much less specialised kind than somatic reactions. Thus, when once food is swallowed it is seldom at all interfered with by extra-intestinal factors. Any changes in diet in animals are usually exceedingly gradual in operation. When once an alimentary gland has been evolved it has but little need to develop beyond a very simple degree. When we come to vascular nerves the case is different.



Here comes in the element of age. The vasomotor system is, next to the lymphatic system, the youngest of all the systems of the mammalian body: it has not had time to become very highly organised, and thus to acquire large nerve cells and nerve fibres.

We have a beautiful instance of the great importance of phylogenetic age or youth in determining the calibre of nerve cells and fibres in Gaskell's<sup>5</sup> paper (1889). He specially refers to the fact that the fibres of the phrenic nerve of the rabbit are of small size when compared with the large size of those of the neighbouring fourth cervical nerve root. Evidently Gaskell believed that the phrenic nerve is wholly a visceral nerve, and therefore that the diaphragm which it supplies is a visceral muscle, and not a myotomic muscle. For, on p. 174, he writes: "I had noticed that the motor fibres supplying the somatic muscles of the eye were very much larger than those supplying the facial, pharyngeal, and laryngeal muscles. . . . A similar difference in size of fibres is very evident in the formation of the phrenic nerve. In Fig. 5, Pl. xvi., I give a section through the fourth cervical nerve of the rabbit at the point where the fibres of the phrenic are separating out from the rest of the fibres of the fourth cervical nerve; as is seen, the fibres of the phrenic nerve are *very uniform in size*,\* and much smaller than the large motor fibres of the somatic muscles supplied by the fourth cervical nerve." Now anyone who has attentively studied the literature of the development of the diaphragm will agree with me that it is one of the most difficult subjects of vertebrate embryology, and that the last word has not yet been said on it. But the modern teaching is that the diaphragm is derived from cervical myotomes. The phrenic nerve, then, contains some somatic components. If the phrenic be in part a somatic nerve, how are we to interpret (1) the relative smallness of its fibres, and (2) the approximate uniformity of their size in Gaskell's rabbit? Although the diaphragm is as old as air-breathing vertebrates which appeared as long ago as the *Permian* era, it is nevertheless a young respiratory apparatus when compared with that of water-breathing vertebrates. Respiration is one of the essential, fundamental attributes of all animals; but at the same time it is, on the whole, a simple and unprogressive apparatus. It has to go on steadily and uninterruptedly throughout life, and is, I take it, much less subject to sudden and violent interruptions in its even course than are the circulation

\* The italics are mine. The uniformity is not absolute.

and the nervous system. It resembles the digestive system in this respect. In both, the muscular movements are relatively slow, though powerful. They probably need, therefore, a less highly endowed and less specialised nervous system to direct their operations than is needed for the striped muscle system which brings the animal into intimate and frequently changing relationships towards his environment. With regard, then, to the phrenic nerve, we see that, although it has had a long time in which to develop and progress, it has had but little need to do so, and this is probably why its nerve fibres have not attained to anything like the thickness of other nerve fibres which supply striped muscle. Gaskell was not quite accurate when he described the fibres of his rabbit's phrenic nerve as "very uniform in size"; a careful look at his figure shows that one fibre is very much larger than the rest; indeed, it might fairly be called a rather large-sized medium one if it were put into the section of the fourth cervical nerve root; and although the calibre of the remainder of the fibres is almost uniform, there are very slight variations evident. We know from the work of numerous histologists, whom I have quoted in this paper, that all nerves, both visceral and somatic, contain fibres of varying size. I have no doubt that in all cases the essential underlying factor is the variation in the age of the various fibres of each nerve. It is probable that throughout the whole of their embryonic and foetal life, and throughout a part of their post-natal life, all nerve fibres undergo a gradual progressive increase of calibre; and this increase is greater and more rapid in the case of the somatic nerves because they carry out a higher, more specialised work than the visceral nerves. The work of Boughton<sup>13</sup> is very suggestive in connection with this part of the question. Again, Edgeworth<sup>8</sup> found that in the dog many large nerve fibres go to the skin of the trigeminus area, together with many smaller ones. We know that, as the fronto-parieto-temporal area of the skull increases in size *pari passu* with the increasing size of the cerebral hemispheres, there is a gradual increase in the number of cutaneous trigeminus fibres to supply the newly-formed skin of that area. Hence we have a large number of small, young nerve fibres added to the pre-existing larger ones; and, further, this process goes on during post-natal life. We have only to think of the great increase of size of a fully grown Man's trigeminus area since the days of his infancy. Even the non-medullated

fibres vary greatly in calibre; the researches of S. W. Ranson during the last four or five years, by his pyridine-silver technique, have shown that vast numbers of non-medullated nerve fibres exist in spinal nerves, vagus roots, &c., many being of extreme fineness. I think it is probable that most of these very fine ones go to blood vessels. On the question of the complexity of the dendritic connections of neurones, an interesting point was brought out by Campbell<sup>12</sup> ten years ago, viz., that the largest cells of his visuo-psychic area of the human cerebral cortex "are obviously larger than the solitary cells of Meynert in the calcarine (visual) area" (p. 128). Now the former area must be on the whole younger than the latter; yet its largest cells are larger than the largest of the latter area. Doubtless the reason is that the visuo-psychic area, which functionates in the higher work of the speech-mechanism, has richer and more numerous inter-neuronic connections.

Although it has been known for many years that the thickest nerve fibres contained in the three eye-muscle nerves of man and the dog are of but slightly narrower calibre than the largest nerve fibres supplying the huge muscles of the lower extremity, no writer hitherto seems to have seen any particular significance in this fact. Its meaning seems to me to be this: The large movements of a man's legs in running, for instance, may be and are quick movements; but their quickness depends mainly on the fact that a series of levers is working, and the proximal joint, the hip, is flexed and extended by very short, thick, powerful muscles which are inserted a very short way along the femur: these muscles operate a lever of the third order, and hence execute a quick limb-excursion. It is on this fact that the high speed of a running man, greyhound, or horse depends, just as we see that in the skeleton of all flying birds, especially the swiftest, the humerus is greatly reduced in length in proportion to the length of the radius and ulna: flightless birds have relatively very long humeri. But when the eye muscles move the cornea in various directions, the rapidity of their actions is not helped by any system of levers and jointed limbs. We must, then, look on the eye movements as being really much quicker than any lower limb movement can be. The same thing holds good for those small muscles, such as the facial and the intrinsic tongue muscles, whose nerve fibres are of less maximum calibre than those of the eye-muscle nerves. All

these small muscles of the head, and also the intrinsic hand muscles, have, in proportion to their size and the rapidity of their movements, very much larger nerve fibres than the massive limb muscles receive. Indeed, if we take the latter as the standard by which to judge of the size of muscular nerve fibres, we do not in the least exaggerate when we call the small nerve fibres supplying the intrinsic hand and tongue muscles, and the facial and other small muscles of the head and upper part of the neck, "giant fibres," and the nerve fibres of the three eye-muscle nerves "super-gigantic" fibres. As far as I know, there is no exception to the rule that slowly acting muscles are innervated by relatively small cells. Even Johnston's brook lamprey shows this feature, though its nerve fibres are very large. We may recall the fact that the slowly acting red muscles of the rabbit receive smaller nerve fibres than the white muscles. Certainly in mammals, at any rate, slow muscular movements are carried out by means of nerve cells and nerve fibres which are very small in comparison with the large size of the muscles concerned. Unstriped muscle contracts in a slow, worm-like fashion, and it never receives large nerve fibres. If we study the difficult question of the nature of the many factors by which persistent types of animals have managed to persist in the unceasing struggle for life, we can see that one very important factor is the element of quickness of motor response to outside stimuli, especially those which enter by means of one or other of the four ancient "distance receptors," viz., the olfactory, visual, acoustico-lateralis system, and the auditory. All these systems are in intimate direct or indirect connection with large neurones which carry out rapid movements of the tail in swimming, of turning of the eyes or head and trunk, and of the limbs, all of which are necessary for the effectual pursuit of prey or escape from enemies; especially is this necessary in the ocean, which is at best but a poor place to hide in. Obviously, therefore, these distance receptors have played a great part in the preservation of persistent types of animals. A striking illustration of the value of agility of movement to an animal is seen in the fact that the heavily armoured *Ganoids*, which once swarmed in *Palaeozoic* seas, were no match whatever for the swifter predatory *Selachians*; and to-day *Ganoids* are limited to some seven varieties, mostly river and lake forms. Even in man we have a well-recognised protective nervous mechanism, which seems to me to be on all fours with Parker's

*Teleost* auditory reflex.<sup>16</sup> In man some of the fibres of the auditory tract end round cells of the homolateral superior olive, which in its turn sends fibres to the homolateral sixth nucleus. A sudden loud sound falling on the right ear produces by this mechanism a rapid reflex turning of the eyes to the right; and this is carried out by large neurones, as in Parker's reflex, and in the case of the external rectus muscle by means of what are, in proportion to the tiny size of that muscle, in reality gigantic nerve cells and fibres. In conclusion, there is one point concerning the electric organs of electric fishes which seems to me to be of great significance: it is known that the South American eel, *Gymnotus electricus*, has a much stronger electric power than even the African *Malapterurus electricus*, and the latter has, in its turn, a stronger power than have the electric rays, *Torpedo ocellata* and *hypnos*, which are found in the Atlantic and Mediterranean. Now in *Gymnotus*, whose electric organ is said to receive over two hundred nerves, these nerves arise in the spinal cord, whereas in *Malapterurus* there are only two giant neurones, one on either side of the middle line, passing from the upper end of the spinal cord to the tail, and dividing into branches in their downward course. It is no wonder, then, that the former fish has the more powerful battery. But, although *Torpedo* has a special electric lobe in the medulla oblongata, which sends many nerves to its electric organ, and in addition receives a special trigeminus branch, yet its battery is less powerful than that of *Malapterurus*, which has only its two giant electric organ neurones. This fact speaks volumes for the immensity of the power which giant fibres can set free. It seems certain that the peculiar value of these and of other giant neurones, such as the Mauthner's neurones, resides in the extraordinary power of their discharge and the rapidity of the motor reactions which they evoke. And no one doubts that they are very ancient nervous structures.

#### 4. CONCLUSIONS.

1. The calibre of a nerve cell or a nerve fibre does not depend on the size of an animal, nor on the size of the muscle which it innervates, nor on the length of the course which the nerve fibre has to traverse, nor on the number of muscle fibres which the nerve fibre innervates, nor on the morphological position of the tissue which the nerve fibre innervates.

2. There are three factors, and apparently only three, which

combine to determine the calibre of nerve cells and fibres, viz., (a) the phylogenetic age of nerve cells and fibres, (b) the number and complexity of the dendritic connections of nerve cells, and (c) the large size of the nerve cell or fibre in relation to the size of the muscle which it innervates, and to the quickness of its motor response to afferent stimuli.

3. Although age is an important factor in determining the size of nerve cells and fibres, yet relatively juvenile cells are sometimes large, *e.g.*, the giant cells of the mammalian cortex cerebri: in these instances the large size of the cell is due to its rich and very numerous dendritic connections with other neurones.

4. All nerves, both somatic and visceral, contain nerve fibres of varying sizes: the smallest are the youngest, the larger ones are older, and the largest are the oldest.

5. The relatively small size of the nerve fibres of viscera, of the branchial apparatus, and of the phrenic nerve of mammals, is probably due to the relative simplicity and unprogressive nature of the functions of the alimentary and respiratory systems. The large size of somatic motor and somatic afferent nerve cells and fibres is due partly to the greater complexity and the more variable nature of the work which they have to perform.

6. Probably all nerve cells and nerve fibres undergo a steady, gradual increase in calibre throughout embryonic and foetal life, and certainly during post-natal life up to the period of fully mature growth of the body. But the rate of increase varies at various periods.

7. It appears to be the rule in most vertebrates that large nerve fibres rise in large cells, and small fibres in small cells. But in the brook lamprey the nerve cells are very much smaller in relation to the size of their nerve fibres than holds good for other vertebrates. This peculiarity of the lamprey's nerve cells is attributed by the writer to the simplicity, sluggishness, and slowness of that animal's muscular movements.

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## Abstracts.

### ANATOMY.

**THE CHORDA TYMPANI AND MIDDLE EAR IN REPTILES, (448) BIRDS, AND MAMMALS.** EDWIN S. GOODRICH, *Quart. Journ. Microsc. Sci.*, 1915, lxi., July, p. 137 (3 coloured plates).

A COMPARISON of the development of the various structures of the middle-ear region in the lizard, duck, and mammal, show a remarkable uniformity in their origin and relation. The first gill-pouch separates off from the epidermis from below upwards; at its dorsal edge is an epiblastic proliferation contributing to the geniculate ganglion. The tympanum is formed between the outer epidermis and an outgrowing diverticulum of the hinder lower region of the first gill-pouch. The chorda tympani is a post-trematic branch of the facial nerve, developing behind the first or spiracular gill-slit, and passing down to the lower jaw between the tympanum and the closing spiracle. The relation of these parts to the skeleton and blood vessels is (with the exception mentioned below) constant throughout the Amniota, and is only intelligible on the view of Reichert that the proximal region of the columella corresponds to the stapes, the quadrate to the incus, and the articular to the malleus.

In the chick the chorda tympani develops as a pre-trematic branch of the facial nerve from its first appearance. In adult gallinaceous birds the chorda passes down directly from the geniculate ganglion in front of the tympanic cavity. This exceptional position is probably due to some secondary modifications at present unexplained. The coloured illustrations are remarkably fine.

A. NINIAN BRUCE.

### PHYSIOLOGY.

**EXPERIMENTS ON THE RESTORATION OF PARALYSED (449) MUSCLES BY MEANS OF NERVE ANASTOMOSIS.—Part III. ANASTOMOSIS OF THE BRACHIAL PLEXUS, WITH A CONSIDERATION OF THE DISTRIBUTION OF ITS ROOTS.** ROBERT KENNEDY, *Proc. Roy. Soc.*, 1915, lxxxix., p. 94.

THE following are the general conclusions:—

1. The brachial plexus of *Macacus* and that of man are practically identical, at least as regards the fifth, sixth, and seventh cervical nerves, the variation being of the nature of



a plexature of the plexus in man, but not to the extent of an entire root.

2. In *Macacus*, section of the fifth nerve alone paralyses no muscle and limits no movement, although it may weaken some.

3. In *Macacus*, section of the sixth and part of the seventh disturbs the function of the limb to an appreciable extent, but the disturbances can be compensated for, and the movements regained, although probably with diminished strength, without reunion of the roots, and without aiding the recovery of function by anastomosis.

4. In *Macacus*, section of both fifth and sixth nerves almost entirely or entirely paralyses the deltoid, but not entirely the flexors of the elbow or the supinators, but in man section of these two roots not only completely paralyses the deltoid, but also the external rotators of the arm, the flexors of the arm to such an extent at least that they cannot produce flexion, and also the supinator brevis to such an extent that it cannot produce supination, and in some cases also paralyses the extensors in the forearm.

5. In *Macacus*, in order to paralyse completely not only the deltoid, but also the flexors of the elbow and the supinator brevis, it is necessary to divide the fifth, sixth, and seventh nerves, as apparently more of the fibres to the flexors of the elbow pass in the seventh nerve than in the case of man.

6. In *Macacus* the paralysis resulting from section of the fifth and sixth may be largely restored by anastomosis of the peripheral segments of the two roots to the seventh cervical nerve, or to the spinal accessory, and the resulting restoration of the muscles does not materially differ in date of onset, in progress, or in ultimate result in the two cases.

7. The time taken for restoration of function by means of anastomosis is approximately the same in the case of the brachial plexus in *Macacus*, and in the case of the limb nerves distal to the plexus in the dog, and in the case of the facial nerve in the dog and *Macacus*.

A. NINIAN BRUCE.

## PSYCHOLOGY.

**THE BINET-SIMON TESTS AS A MEASURE OF THE**  
(450) **DEVELOPMENT OF BACKWARD AND DEFECTIVE**  
**CHILDREN.** ALICE DESCŒUDRES, *Archiv. de Psychol.*, 1915,  
xv., June, p. 225.

THE subjects of this experiment were twenty-six children of ages varying from 6 to 14, attending a special class in Geneva. They were all tested two or more times, the interval being usually about a year. The intellectual development, as shown by the tests, was

found to correspond well with improvement in school work. Some of the results speak well for the work of the special class; thus one boy first tested at the age of  $7\frac{1}{4}$ , and twice thereafter at intervals of a year, showed first a mental age of 4, then one of  $6\frac{3}{4}$ , then one of  $8\frac{3}{4}$ .

The writer favours the use of the intellectual quotient, *i.e.*, the ratio of the mental age to the real age, as the most convenient and accurate method of indicating a child's mental status; for this recognises the fact that a retardation, say, of three years, is more serious in the case of a young child than in the case of an older one.

MARGARET DRUMMOND.

**EXPERIMENT ON THE MEMORY OF SPONTANEOUS ASSOCIATIONS.** (451) ED. CLAPARÈDE, *Archiv. de Psychol.*, 1915, xv., June, p. 306.

It is well known that Jung regards the failure to remember a verbal association spontaneously made as a sign of a "complex." Claparède describes a series of experiments devised with the object of testing whether associations spontaneously made are better remembered than associations given by another person. He finds that spontaneous associations show a marked superiority in this respect. He proceeds to inquire into the cause of this difference; but while it is easy to point to certain factors, notably self-activity, which undoubtedly affect the result, he considers that these are insufficient to account for the marked difference obtained, and that therefore the problem is one which awaits further investigation.

MARGARET DRUMMOND.

**REMARKS UPON DR CORIAT'S PAPER, "STAMMERING AS A PSYCHONEUROSIS."** (452) MEYER SOLOMON, *Journ. Abnorm. Psychol.*, 1915, x., June-July, p. 120.

DR CORIAT contended in his paper in the above Journal (*v. Review*, p. 100) that stammering arises in children as a defence or compensation mechanism, the object of which is to keep from consciousness certain painful memories and undesirable thoughts, in order that they may not be betrayed in speech, and asserted that these hidden, repressed, unconscious thoughts are related to the sexual impulse or wish.

Dr Solomon is of the opinion that not a single case has been presented in proof of the conclusions arrived at by Dr Coriat in his paper, and is further of the opinion that the application of Freud's sexual theories to stammering in children is fraught with the greatest danger to the child, to the community, and to society in general.

H. DE M. ALEXANDER.

**ASPECTS OF DREAM LIFE.** The contribution of a woman. *Journ.* (453) *Abnorm. Psychol.*, 1915, x., June-July, p. 100.

THE author recalled and wrote out during three years nearly 5,000 of her dreams. In none of the examples is a complete analysis attempted, the author merely furnishing a clue. The examples given are not convincing, and in more than one instance are distinctly morbidly unpleasant. The author had been subjected to psycho-analysis herself on account of an obsession—probably due to jealousy—but the dreams show no evidence of this.

H. DE M. ALEXANDER.

**PSYCHONEUROSES AMONG PRIMITIVE TRIBES.** ISADOR H. (454) CORIAT, *Journ. Abnorm. Psychol.*, 1915, x., Aug.-Sept., p. 201.

AN account of certain nervous attacks—running amuck, &c.—among the primitive races of the Fuegian Archipelago. The author, by a study of their dreams, their system of taboos, and their myths, explains the origin of the above nervous attacks on the Freudian hypothesis.

H. DE M. ALEXANDER.

**TWO INTERESTING CASES OF ILLUSION OF PERCEPTION,** (455) GEORGE F. ARPS, *Journ. Abnorm. Psychol.*, 1915, x., Aug.-Sept., p. 209.

A HEALTHY boy, 9 years of age, on retiring to bed, and while still awake, complained of falling, and clutched vigorously to the bed clothes and the arms of the parents. Persuasion did not dispel the illusion. It rarely occurred as a dream. It disappeared in the erect posture. As the child, in expressing his fear, complained of not seeing his parent sitting beside him on the bed, a coal oil lamp (a lesser illumination was ineffectual) was placed beside the bed not over two feet from the child's head; the child went to sleep facing the full glare of the lamp for six months, and then at intermittent periods according to the re-appearance of the illusion. Recovery ensued in eighteen months. The author thinks the intensity of the visual stimulus (the lamp) deflected the nervous current from the neural processes underlying the illusion, and thus changed the direction of attention.

A six-year-old girl complained at the dinner table of the decrease in size of a number of objects in the room, but more particularly of the apparent smallness of her father's head. The author suggested that, on the appearance of the phenomenon, the child be requested to fixate the end of the father's index finger which was revolved in the air to form various geometrical figures. This had the desired effect. This was a case of the object altering

its apparent size without altering its distance, and it was probably due to inadequate convergence, the optic axes not intersecting at the object, but beyond it, so that the axes were more or less parallel; thus the feeling of convergence was less intense than experience teaches is necessary to perceive the object as such a size, and at such a distance. Here we have the retinal image constant for the apparent and the real size of the object (head). Obviously the retinal processes are constant for the two interpretations of magnitude, and the ambiguity is due to the concomitant factor of convergence. H. DE M. ALEXANDER.

**THE THEORY OF PSYCHO-ANALYSIS.** C. G. JUNG, *The Psycho-analytic Review*, Vol. i., pp. 1-40, 153-177, 260-284, 415-430 ; Vol. ii., pp. 29-51.

THESE lectures, delivered in New York in the autumn of 1911, were the first occasion on which Jung indicated his approaching schism from the psycho-analytical school. It is extremely difficult to obtain at all a clear conception of his altered views from them alone, and they only become intelligible in the light of his subsequent publication (*e.g.*, one in the same *Review* for July 1915). It is also impossible to do them justice in an abstract, for it would need a special article to expound them, and the divergence between them and the conclusions of the psycho-analytical school. His conclusions differ because his mode of approach to the problems is different, for he has frankly renounced the methods of scientific psychology, replacing — or rather supplementing — them by sundry vitalistic and teleological principles imported from the spheres of philosophy, metaphysics, and religion. ERNEST JONES.

**THE CASE OF MISS A. : A PRELIMINARY REPORT OF A (457) PSYCHO-ANALYTIC STUDY AND TREATMENT OF A CASE OF SELF-MUTILATION.** L. E. EMERSON, *The Psycho-analytic Review*, Vol. i., p. 41.

THE patient, a woman of 23, was admitted to the Massachusetts General Hospital, where the case was investigated, on account of a cut on her left arm, which had been self-inflicted; in the past three years she had cut herself some twenty-eight or thirty times. Most of the scars were on the left arm, one was on the breast, and one, forming the letter W, on the leg.

From the eighth to the thirteenth year she had been masturbated by her uncle nearly every day. When she was twenty

a man attempted a sexual assault on her, and she cut herself with a bread-knife that happened to be in her hand. She noticed that the moment after the cut she was rid of an extremely bad headache, with which she was plagued, and from that time continued to injure herself in order to free herself from the headache and from an undescribable "peculiar feeling." Later on she entered into relations with another man, purely because she wanted a child. After she had separated from him she received a proposal of marriage, on which she told the man her whole story; he called her a "whore," and refused to marry her. She went home, took her brother's razor, and cut the letter W in her leg (no doubt under the influence of Hawthorne's "Scarlet Letter," in which a woman is similarly branded for sexual irregularity).

Emerson gives a good clinical description of the case, but adds very little of analytical interest. He discusses the various roots of self-mutilation, which he regards on the one hand as a symbolisation of masturbation and of sadism, and on the other hand as a defensive measure against pregnancy (as replacement of menstruation).

ERNEST JONES.

**BLINDNESS AS A WISH.** T. H. AMES, *The Psychoanalytic Review*, (458) Vol. i., p. 55.

A HEALTHY man of 39 woke one morning to find himself completely blind. Though he had not shown any previous hysterical symptoms, the diagnosis of hysteria was made, chiefly by exclusion. Ten weeks later he came under the author's care, and the blindness disappeared after four days' treatment. This was mainly carried out through the analysis of two dreams, which revealed the meaning of the symptom, at least so far as its upper layers are concerned. The dreams were very simple, and the free associations to them are narrated, together with an interesting discussion of their significance. The symptom expressed the patient's wish never to see his wife again. He had always been on bad terms with her, and on the very day before the attack of blindness he had decided to run away from her and his three children. The symptom was a compromise between this and his conscience.

ERNEST JONES.

**PSYCHO-ANALYSIS AND HOSPITALS.** L. E. EMERSON, *The Psycho-analytic Review*, Vol. i., p. 285.

EMERSON is perhaps in a unique position in being the official psycho-analyst to a general hospital, and he discusses here the

possibility and desirability of such work being done within hospital limits. He considers that the absence of a special department for mental treatment is a serious handicap in a hospital, for it means not only that many patients do not get the treatment appropriate to their case, but also that they are apt to get definitely wrong (*e.g.*, surgical) treatment instead. It is, of course, desirable that such a department should work in conjunction with a fully developed Social Service, such as that of the Massachusetts General Hospital. He admits the difficulty of carrying through under such circumstances anything more than a superficial psycho-analysis, but contends that this is often sufficient for practical purposes.

ERNEST JONES.

**THE COLOUR COMPLEX IN THE NEGRO.** J. E. LIND, *The Psycho-analytic Review*, Vol. i., p. 404.

A COLOUR complex is generally present in negroes, even those of normal mentality, that is to say, the idea of their dark integument is dissociated and invested with a considerable body of emotion. Lind gives many proofs of this among the normal, and then discusses the part it plays in psychotic life. In a large number of delusions the wish to be white is very evident.

ERNEST JONES.

**THE PSYCHIC COMPLEX IN CONGENITAL DEFORMITY.** DAVID (461) L. SOHN, *N.Y. Med. Journ.*, 1914, c., Nov. 14, p. 959.

A GIRL, aged 19, who suffered from congenital amputation of the forearm, continually complained of pain in the fingers of this side, although they had actually never existed.

This subjective feeling of pain in the fingers and the consciousness of a hand were equivalent to a wish fulfilment. Under treatment suggestive in nature she steadily improved.

A. NINIAN BRUCE.

## PATHOLOGY.

**A GANGLIONEUROMA OF THE SPHENO-MAXILLARY FOSSA.** (462) JOHN SHAW DUNN, *Glasgow Med. Journ.*, 1915, lxxiv., Aug. p. 98 (4 figs.).

A BOY, aged 3 years, previously healthy, developed a swelling on the right temple just behind the frontal process of the right malar bone. It was about the size of a marble, and had a cystic

feeling. At the operation an encapsulated tumour was found lying directly on the wing of the sphenoid, but could not be removed intact. The contents resembled grey matter.

On microscopic examination it was found to consist of fibrous and cellular parts. The fibrous parts consisted of nerve cells, with ganglion cells, sheath cells, and axis cylinders all typically represented. The cellular parts were rich in small cells of an embryonic type which were considered to be nervous tissue of embryonic character, the spindle-shaped cells being early forms of sheath cells, and the rounded cells being either predecessors of ganglion cells or more primitive forms of neuroblasts. Such neuroblastic tissue is most liable to develop malignancy.

The tumour possibly arose from the spheno-palatine ganglion, which contains elements belonging to the sympathetic nervous system.

A. NINIAN BRUCE.

**PRIMARY MELANO-SARCOMA OF THE ADRENALS.** W. W. G. (463) MACLACHLAN, *Journ. Med. Research*, 1915, xxxiii, Sept., p. 93.

As a rule pigmented tumours arise in the skin, choroid coat of the eye, or less frequently, in the meninges. Tuzcek has held that the ganglionic nerve cells, which contain melanin, may be the cells from which some pigmented tumours arise, and thus account for some of the very unusual situations in which they may be found.

There is here described a case of primary bilateral melano-sarcoma of the adrenals with extensive metastases in a man of 48 years. The skin, choroid of the eye, and meninges were uninvolved. Microscopically the tumour differed in no way from the usual melano-sarcoma which arises in the skin or in the choroid. The tumour masses on either side were almost equal in size and shape. The bilateral involvement can be regarded in no other light than two primary foci. The shape of the tumours, roughly triangular, bore a likeness to the normal adrenal, and their relation to the kidney was that of the normal adrenal gland. The absence of pigmentation of the skin is striking. That the tumour did not arise from the adrenal cortex is certain. Further, the pigment in the adrenal cortical cells is a lipochrome, not melanin. It was considered that the tumour had arisen from chromatophore cells lying in the adrenal medulla, and which were probably congenitally aberrant.

A. NINIAN BRUCE.

**EXPERIMENTAL SUBARACHNOID INJECTIONS OF TRYPAN**

(464) **BLUE.** W. C. WOOLSEY, *Journ. Nerv. and Ment. Dis.*, 1915, xlii., July, p. 477.

As the vital stain, trypan blue has the same chemotactic affinity for tissue as salvarsan; it was thought that injections of this substance would help to settle the question whether salvarsan injected into the subarachnoid space reached the central nerve tissue with greater certainty and intensity than when administered intravascularly or subcutaneously.

Observations were made on twenty-six successful experiments with cats, dogs, and rabbits, and after lumbar subarachnoid injections, macroscopic and microscopic examinations of the central nerve tissues were made.

The technique employed was to give repeated subcutaneous injections of from 3 to 5 ccs. of 2 per cent. saline solution of trypan blue, and single intra-arterial and intravenous injections of 10 to 20 c.c. of trypan blue solution.

Single lumbar subarachnoid injections of varying doses of trypan blue from  $\frac{1}{2}$  c.c. of 0.1 per cent. solution in rabbits to 10 c.c. of 2 per cent. solution in large dogs.

The uniformly fatal and serious results reported by Goldmann following lumbar subarachnoid injections of trypan blue were not observed by the writer.

As a result of his work, the author concludes that his experimental observations seem to indicate that salvarsan, administered subarachnoidally, does reach the central nerve tissues more certainly and with greater intensity than when given intravascularly or subcutaneously. When administered intraspinaly, its diffusion to the cranial cavity is less intense than in the cord, and perhaps for intracranial lesions direct injection into the cranial subarachnoid space through a trephine opening would be less dangerous and more effectual.

D. K. HENDERSON.

**CLINICAL NEUROLOGY.****A CURIOUS CASE OF SKULL WOUND BY EXPLOSION OF A**

(465) **SHELL.** (Une cas curieux de blessure du crâne par éclat d'obus.) A. VINCENT and A. WILHELM, *Paris méd.*, 1915, v., p. 118.

A SOLDIER was hit on the skull by a shell, and left for dead between the French and German lines for two days. He was then seen to move, and was rescued in a comatose condition. Above the right frontal eminence was a ragged hole from which



a little brain matter protruded, the left side of the face was much swollen, and the X-rays showed a fragment of shell above the second left molar tooth. Some improvement took place after the fragment had been removed, but subsequently headache, nuchal rigidity, and Kernig's sign supervened, and a cerebral abscess was evacuated spontaneously through the frontal wound.

Recovery then took place gradually. The permanent infirmity resulting from the wound was loss of sight in the left eye, with slight divergent strabismus due to passage of the projectile through the orbit and section of the optic nerve, right superior rectus and inferior rectus muscles. The eyeball, apart from slight atrophy, remained intact, and no psychical defect occurred.

J. D. ROLLESTON.

**VASCULAR LESIONS AND LESIONS OF THE PERIPHERAL  
(466) NERVES IN WOUNDS OF THE LIMBS.** (Quelques considérations sur les lésions vasculaires et les lésions des nerfs périphériques dans les blessures des membres.) MME. ATHANASSIO-BÉNISTY, *Bull. et mém. Soc. méd. Hôp. de Paris*, 1915, xxxix, p. 391. PIERRE MARIE, *ibid.*, p. 396. NETTER, *ibid.*

THE speaker alluded to the recent communication by Meige and herself on this subject (*v. Review*, 1915, xiii, p. 281), and showed further cases illustrating the association of vascular with nervous lesions in wounded soldiers.

In the discussion Pierre Marie insisted on the fact that the earlier writers wrongly attributed to lesions of the nervous system trophic lesions which were by no means due to that cause. In the great majority of nerve injuries, with trophic troubles, the latter are due to a concomitant vascular lesion, which plays by far the most important part in their production. Similarly in sacral bedsores in spinal injuries, the trophic action of the nerves is of secondary importance, but excoriations of the skin, due to prolonged pressure on the bed and contamination by the excreta, play the most important part.

Netter agreed with Pierre Marie as to the causation of bedsores.

J. D. ROLLESTON.

**TEMPORARY BLINDNESS FROM A PENETRATING BULLET  
(467) WOUND OF THE OCCIPITAL LOBE.** A. EISDELL MOORE, *Lancet*, 1915, Aug. 21, p. 385.

THIS is an interesting report of a case in which a bullet passed through the left and right occipital lobes from just below the left

lateral sinus. He suffered from complete blindness, due to concussion, from the time of the injury, and this at first was accompanied by severe headache and vomiting, and later by loss of memory for an unstated period. On admission to the base hospital he was very drowsy, but quite sensible, and there was no evidence of paralysis. His vision gradually improved, and on the twenty-second day it was quite normal again. No surgical interference was necessary.

R. DODS BROWN.

**BILATERAL LESION OF THE AUDITORY CENTRE** THOMAS  
(468) GUTHRIE, *Journ. of Laryngol., Rhinol., and Otol.*, 1915, xxx., May,  
p. 177.

A MAN, aged 32, was seized with sudden violent pain at the back of the head, followed in a week by aphasia and verbal amnesia. He recovered from this in a week, but three days later right ptosis was noticed, and on the next day right hemiplegia. The condition improved with mercury, but was followed by sudden pain in the right side of the head, and on the next day by left hemiplegia, blindness, and deafness. His mental condition was much affected. The paralysis and loss of vision soon disappeared, and, except for slight facial palsy, were absent a fortnight after this attack. His general condition was then good and he talked freely, but there was some paraphasia, and his understanding of written language was limited to simple sentences. He remained completely deaf. Apart from the deafness, which did not alter, he subsequently made a complete recovery, and except for a seizure in which he became speechless for twenty minutes, he has remained in perfect health ever since.

It was considered that he had suffered from a bilateral cortical lesion, resulting in damage to both temporal lobes, and destruction of the auditory centre on both sides of the brain. As the vestibular reactions were normal, the presumption is very strong that the labyrinth and eighth nerve were not involved.

Destruction of one cortical centre for hearing causes deafness of neither ear, although, if a portion of the *left* temporal lobe be destroyed, *word* deafness may result. The eighth nerve in the dog appears to cross completely, but in man the crossing is only partial.

Six cases of bilateral lesion of the auditory centre have up till now been described, namely, by Mott, Boenninghaus, C. K. Mills, Kahler and Pick, Wernicke and Friedländer, and Pick, five of which were verified by autopsy.

A. NINIAN BRUCE.

- THE OCULO-CARDIAC REFLEX IN CEREBRO-SPINAL MENINGITIS.** (469) GITIS. (Le réflexe oculo-cardiaque dans la méningite cérébro-spinale.) P. SAINTON and C. HURIEL, *Bull. et mém. Soc. méd. Hôp. de Paris*, 1915, xxxix., p. 561.

THE writers examined this reflex in twelve cases of cerebro-spinal meningitis with the following results: the reflex is always affected, and the change in its character is always the same. There is slowing of the pulse and diminution of the amplitude of its beats, but this slowing showed marked differences according to the stage of the disease. At the onset the reflex is only slightly affected, as a rule there is a slowing of from twelve to sixteen beats; at the height of the disease the intensity of the reflex is very exaggerated, the slowing being from thirty to fifty beats; at the end of the disease the reflex becomes less marked. The condition of the reflex thus possesses some prognostic value.

J. D. ROLLESTON.

- ON THE BACTERIOLOGY OF CEREBRO-SPINAL FEVER.** D. (470) NABARRO, *Brit. Journ. Child. Dis.*, 1915, xii., p. 193.

THE writer gives a résumé of the history of the bacteriology of the disease from the discovery of the meningococcus by Weichselbaum in 1887 down to the latest work on the subject during the recent epidemic. He then describes the morphology and biology of the meningococcus, and gives an account of its occurrence in the human body. The chemistry and cytology of the cerebro-spinal fluid in meningococcic meningitis are described, and the changes which are brought about by the injection of serum.

J. D. ROLLESTON.

- MENINGOCOCCIC EMPYEMA.** A. I. RUBENSTONE, *N. Y. Med. Journ.*, (471) 1914 c., Nov. 14, p. 975.

THIS appears to be the first case of a meningococcus isolated from an empyema.

A woman, aged 55, developed a massive empyema on the left side of the chest. Smears made from pus obtained on chest puncture revealed an intracellular and an extracellular Gram-negative diplococcus. On culture the meningococcus was isolated. The blood cultures were sterile. An autopsy was not permitted.

A. NINIAN BRUCE.

**ACUTE MENINGEAL STATE WITH ASEPTIC PURIFORM**  
 (472) **REACTION OF THE CEREBRO-SPINAL FLUID FOLLOW-**  
**ING ANTI-TYPHOID VACCINATION.** (Etat méningé aigu  
 avec réaction puriforme aseptique du liquide céphalo-rachidien,  
 consécutif à la vaccination antityphique.) MOUSSAUD and R. J.  
 WEISSENBACH, *Paris méd.*, 1915, v., p. 224.

A PREVIOUSLY healthy soldier, aged 25, developed symptoms of meningitis two to three hours after the third injection of anti-typoid vaccine. The symptoms were: fever, headache, delirium, vomiting, nuchal rigidity, Kernig's sign, hyperæsthesia, and labial herpes. The cerebro-spinal fluid was turbid and appeared purulent, but cytological examination showed that the polymorphs were little if at all affected. The albumin was normal in amount and the fluid reduced Fehling's solution. Bacteriological examination was entirely negative.

Twenty-four hours after lumbar puncture improvement took place, and in another forty-eight hours the patient was convalescent. Lumbar puncture gave issue to a clear fluid with only slight lymphocytosis.

J. D. ROLLESTON.

**LOCALISING BRAIN SYMPTOMS (HEMIPLEGIA AND HEMI-**  
 (473) **SPASM) AS EARLY EVENTS IN TUBERCULOUS MENIN-**  
**GITIS.** C. O. HAWTHORNE, *Brit. Journ. Child. Dis.*, 1915, xii,  
 p. 232.

A RECORD of two cases:—

1. A boy, aged 10 years, previously healthy except for some enlarged glands, vomited and developed paralysis of the left face and left upper limb and a double extensor response of the left foot. The paralysis disappeared in forty-eight hours, but the next day there were repeated convulsive seizures followed by a return of the hemiplegia. The paralysis again disappeared, but headache, vomiting, and cerebro-spinal lymphocytosis left no doubt as to the diagnosis.

2. A boy, aged 1 year and 7 months, was seized with convulsions strictly limited to the right side. They ceased soon after admission to hospital, but returned two days later, when he developed typical signs of tuberculous meningitis. The diagnosis was confirmed post mortem.

Hawthorne attributes the early, sudden, and limited paresis to multiple minute emboli reaching the brain from some primary tuberculous focus.

J. D. ROLLESTON.

**SOME FEATURES OF PNEUMOCOCCUS MENINGITIS.** ALFRED (474) GORDON, *N.Y. Med. Journ.*, 1914, c., Oct. 31, p. 859.

PNEUMOCOCCUS meningitis is the most important of all forms of inflammatory changes in the meninges. It occurs in pneumococcal infections, in typhoid, influenza, &c., and is the most common organism in traumatic meningitis.

It presents certain peculiar features. (1) The organism may not be detected in the cerebro-spinal fluid. (2) A purulent or sero-purulent exudate is usually found on the convexity and base of the brain, the thinness and viscosity of which is characteristic. (3) The nervous symptoms may be absent, or may not suggest meningeal involvement. (4) The temperature ascends rapidly and remains stationary at a higher degree than in the epidemic cerebro-spinal form.

A case is described in a man, aged 28, who presented no clinical manifestations during life, and very thin pus in the meninges after death. Pneumococci, however, were found in the spinal fluid.

A. NINIAN BRUCE.

**A CURIOUS SERIES OF CASES OF ACUTE MENINGITIS.** (Série (475) curieuse de méningites aiguës.) LACOSTE and L. BOIDIN, *Paris méd.*, 1915, v., p. 221.

THE writers classify their cases in two groups:—

1. Meningitis with clear fluid, three cases, due to the tubercle bacillus, pneumobacillus, and paracolibacillus respectively. The first died and the other two recovered.

2. Meningitis with turbid fluid, six cases. Two were due to the meningococcus and were still under treatment. One was due to the *Diplococcus crassus* and one to the pneumococcus, and were both fatal, and two were cases of meningeal reaction with aseptic puriform fluid, and rapidly recovered.

J. D. ROLLESTON.

**CONVULSIONS DURING PERTUSSIS.** (Treatment by lumbar puncture, later by intraventricular aspiration.) LOUIS FISHER, *N.Y. Med. Journ.*, 1914, c., Nov. 28, p. 1054.

A BABY, aged 8 months, suffering from pertussis, developed tonic and clonic convulsions, which continued for two days, convulsions recurring at one time every six hours. As they were not relieved by injections of chloral hydrate and potassium bromide given rectally, nor by chloroform, it was decided to try to relieve pressure by lumbar puncture. When this also proved unsuccessful the right ventricle was tapped by piercing the frontal lobe through

the anterior fontanelle, and 20 ccs. of clear cerebro-spinal fluid were withdrawn. The convulsions then ceased. An uninterrupted recovery resulted.

A. NINIAN BRUCE.

**A CASE OF HYSTERICAL PARAPLEGIA.** ADOLPHE ABRAHAMS, (477) *Journ. Royal Army Med. Corps*, 1915, xxiv., May, p. 471.

A SOLDIER was rendered unconscious for four or five days from the bursting of a shell. On recovery he was found to have a small wound in the left buttock, and complete flaccid paralysis of both legs. No plantar response was obtainable on either side, but both knee jerks were present. Cutaneous sensation was entirely absent in the right lower limb, doubtfully present in the left lower limb, and in both arms. No trophic changes were present.

A cross-examination elicited the fact that the patient had a sister who had been completely paralysed for years, resulting in an anxiety-neurosis that the burden of an additional cripple upon the family should not be laid to his charge. He also stated that he had *seen* the legs of a companion by his side blown off; at another time, however, he said he had *heard* they had been blown off.

He was anaesthetised with nitrous oxide, the legs were flexed, he was persuaded the legs had moved during the anaesthesia, and with the aid of further suggestion considerable improvement took place.

A. NINIAN BRUCE.

**A DOUBTFUL CASE OF HYPOPINEALISM.** J. T. PETERS, *Nederl. (478) Tijdschr. v. Geneesk.*, Amsterdam, 1915, ii., p. 1189.

THE author describes what he thinks is probably a case of hypopinealism. The patient, a boy of 4½, was brought to hospital on account of an abscess at the angle of the jaw on the left side; this was opened, and the pus contained streptococci, but no tubercle bacilli (inoculation into a guinea-pig). The family doctor had noted very rapid growth of the child; during the last three months the boy had grown fast, actually putting on 2½ cm. in the last week, and on admission was 122 cm. in height and 29 kg. in weight, the normal figures for his age being 95 cm. and 17 kg. He looked like a boy of 10 or 12. The most striking feature was the development of the genitals; the testes were the size of a hazel nut and walnut respectively, the penis was of adult size, the pubic hair was well developed; there were indications of a moustache, and the shins were hairy. The chin was prominent, and the forearms were longer than the upper arms, an inversion of the normal relation. The hands and feet were large; no further

misproportions in bodily growth were noted. The muscles were well developed, and the boy was said to be stronger than his brother, aged 7. The heart, lungs, liver, and thymus were found by Dr Peters to be normal; the urine contained red blood cells and granular casts, but no indican, melanin, alcapton, or  $H_2S$ . There were small glands palpable in the groins and axillæ; Wassermann's reaction was negative. The blood count showed 4,280,000 red cells, 20,780 white cells, 52 per cent. of hæmoglobin; a differential count showed 82 per cent. of polymorphonuclear leucocytes. The pupils, fundi, and eye muscles were normal, and there were no signs of increased intracranial pressure. There was no ataxia, and the patellar and plantar reflexes were normal. The boy seemed unusually intelligent for his age, and had a strikingly low and loud voice. Dr Peters gives a brief discussion of cases more or less similar to this, concluding that the patient is an instance of hypopinealism. The parents, brothers, and sisters were all healthy and of normal build; the diagnosis of acromegaly, chondrodystrophia, and achondroplasia are dismissed, and it is said that the boy's epiphyses showed no chondrodystrophia when examined by the X-rays. It is added that the boy developed a slight ataxia later, suggesting the pressure of a pineal tumour on the optic thalami or corpora quadrigemina. Dr Peters leaves the nephritis from which the boy apparently suffered unexplained, and makes no mention of abdominal palpation for a hypernephroma in the region of the kidneys. A photograph of the patient is reproduced.

A. J. JEX-BLAKE.

**A CASE OF HYPERGENITALISM.** G. MATTIROLO and M. BERTO-  
(479) LOTTI, *Giorn. d. R. Accad. di Med. di Torino*, 1915, lxxviii., p. 168.

THE patient, a boy of 7 years and 5 months old, after a normal parturition, had fits at intervals between the ages of 1 and 4, but was otherwise normal till then. At the age of 4 pubic hair appeared and the genitals grew rapidly, and the general growth of the body was unusually rapid also. Mental growth was retarded, and the child was always a little stupid. The authors describe the proportions of the body as normal, with the exception that the head was a little too large. The height was 135 cm., the weight 33.5 kg., the average figures for this age being 110 cm. and 19.7 kg. The upper arm was 22 cm. in length, the forearm 19 cm., the hand 14 cm.; no signs of rickets, achondroplasia, or acromegaly were found. The child was muscular, not fat; the genitals resembled those of a youth of 18. Mentally the child was backward, the authors say; he could copy, but could not write to dictation, and read badly, and his mother stated that his

memory was poor. He had six permanent teeth; clinically, the viscera and nervous system were natural; the voice was loud and masculine, like that of full puberty. There were indications of a moustache; the axillary hair was scanty. Bertolotti made a careful examination of the child's bones with the X-rays. The cranium was normal but for thinness of its walls; the sella turcica was natural, and no signs of calcification of the pineal body were observed. Judging by the unions of the epiphyses of the long bones, the child should have been 16 to 18 years old; thus the lower epiphysis of the femur had joined up completely with the diaphysis on its outer side, and nearly so on its inner side. The authors conclude that the child exhibited a transient giantism, the epiphysial unions being such as to make the patient unable to continue to grow normally in the next few years. They discuss the etiology of the hypergenitalism in this instance, without coming to any very definite conclusion. They say there was no evidence of suprarenal tumour (hypernephroma), or of acromegaly, and dismiss these diagnoses. They found no evidence of pineal tumour; but argue that perhaps the fits from which the child suffered and the large size of its head may be taken as evidence of an old inflammation of the choroid plexus producing slight hydrocephalus with atrophic sclerosis of the pineal body. They recognise, however, that such a diagnosis is perhaps far-fetched. Finally they consider whether the case may not have been one of "primary hypergenitalism," a term used in the literature for cases of macrogenitosomia of unexplained origin without any abnormality in the suprarenals, pituitary, or pineal body, and without ovarian or testicular tumour, all of which are conditions sometimes associated with hypergenitalism. They sum up in favour of hypopinealism as the cause of the abnormal genital development of their patient.

A. J. JEX-BLAKE.

**THE PINEAL GLAND IN RELATION TO SOMATIC, SEXUAL, (480) AND MENTAL DEVELOPMENT.** CAREY PRATT M'CORD, *Journ. Amer. Med. Assoc.*, 1915, lxx., Aug. 7, p. 517.

FROM a large series of feeding experiments on guinea-pigs, and also of administration of pineal extracts by hypodermic injections, M'Cord concludes: "Evidence of the precocity of development usually attributed to pineal deficiency (hypopinealism) has been obtained in animals by supplying an increased amount of pineal substance by feeding or injecting pineal preparations. Such administration of pineal substances led to a more rapid growth of body than normal, and determined an early sexual maturity. The excess in rate of growth was most pronounced (40.9 per cent. excess in eleven weeks) in young animals fed with pineal tissue



obtained from young animals. No tendency to gigantism has followed pineal administration. After maximum size was attained, pineal administration appeared to be ineffective. Both males and females respond to the influence of pineal substances in rate of growth, but the response has been more definitely manifested in males."

LEONARD J. KIDD.

**IMPLANTATION OF PITUITARY GLAND IN A CASE OF CON-**  
(481) **GENITAL GENITAL OBESITY (DYSTROPHIA ADIPOSEO-**  
**GENITALIS).** E. WAITZFELDER, *N.Y. Med. Journ.*, 1914, c., Nov.  
21, p. 1002.

THE patient was a ship's cook and was aged 27. He presented a typical adiposo-genital condition, and an X-ray showed that the sella turcica was small (10 mm. by 6 mm.). Transplantation of the pituitary was decided upon, and the pituitary and pineal glands were accordingly removed ten hours after death from a robust German, aged 25, who had committed suicide by hanging. The pituitary gland was transplanted into the axillary border of the right pectoral muscle, and the pineal gland into the left pectoral muscle. On the following day the patient became noisy, unruly, abusive, and depraved in habits. Previous to this he had been quiet, modest, and most amiable. He finally had to be transferred to another hospital, where he continued to be so violent as at times to require restraint. After three weeks' stay there he gradually became more reasonable and quiet, and ultimately returned to the condition he was in on his first admission to hospital.

A. NINIAN BRUCE.

**TUBERCULOMA OF THE PONS VAROLII.** Pulmonary tuberculosis  
(482) in a boy aged 3½ years. Death, necropsy, remarks. L. GUTHRIE,  
*Brit. Journ. Child. Dis.*, 1915, xii., p. 225.

THE cerebral symptoms were paralysis of the left sixth and seventh nerves, inclination of the head to the right shoulder and deviation of the chin to the left, vertical nystagmus, bilateral analgesia over the trigeminal area, unsteady gait, and a tendency to fall to the right side. The only evidence of involvement of the pyramidal tracts was slight exaggeration of the right knee jerk. Death was preceded by general convulsions. Post mortem, the pons was found to be occupied by a tuberculous mass 1 in. in diameter, situated somewhat to the left of the centre. The cerebellum was not affected, but some smaller tumours were found just beneath the cortex on the frontal lobes. The tuberculous process in the lungs which was secondary to disease of the bronchial glands was becoming quiescent.

J. D. ROLLESTON.

**SOME PRACTICAL CONSIDERATIONS IN THE DIAGNOSIS AND**  
 (483) **TREATMENT OF ABSCESS OF THE CEREBELLUM, WITH**  
**A RECORD OF CASES SUBJECTED TO OPERATION.** Sir  
 WILLIAM MILLIGAN, *Journ. of Laryngol., Rhinol., and Otol.*, 1915,  
 xxx., Jan., p. 1.

THE relative frequency of temporal lobe abscess as compared with cerebellar abscess is still a matter of controversy. Heimann gives 68·3 per cent. of the former to 31·7 of the latter. Neumann gives 63·4 and 46·6 per cent. respectively. The author has seen almost three times as many cerebellar as cerebral abscesses, males being affected twice as frequently as females, and the left side twice as often as the right. They occur most commonly from 10 to 30 years of age.

In acute cases the sequence of events is the formation of an extra-dural abscess in the posterior fossa, or a thrombosis of the lateral sinus with secondary infection of brain tissue; while most chronic cases are secondary to labyrinthine suppuration.

No clinical sign is of more importance than nystagmus. In uncomplicated disease of the labyrinth it is at first directed towards the affected side, but soon changes over and is directed to the opposite or sound side. As the function of the labyrinth is gradually destroyed it becomes less and less obvious until finally it disappears. Spontaneous nystagmus, the result of cerebellar suppuration, is directed first towards the sound side, and very shortly afterwards towards the affected side, and increases with the progress of the suppurative focus within the cerebellum. An estimation of the labyrinthine irritability is of special importance in cases where cerebellar suppuration complicates labyrinthine suppuration.

Prior to operation, lumbar puncture, with the removal of a few drachms of cerebro-spinal fluid, obviates the risk of sudden respiratory or cardiac failure. The ideal surgical approach is through the posterior wall of the petrous portion of the temporal bone between the lateral sinus and the internal auditory meatus. Drainage is best established by making a secondary opening behind the groove of the lateral sinus, and a tube should be inserted through both openings.

A. NINIAN BRUCE.

**HEMIPLEGIA COMPLICATING THORACIC ANEURISM. L.**  
 (484) NAPOLEON BOSTON and L. C. RUMMAGE, *N.Y. Med. Journ.*, 1914,  
 c., Dec. 12, p. 1161.

A MAN, suffering from all the signs of thoracic aneurism, was seized with an attack of vertigo and fell to the floor. He did not lose consciousness, but was unable to move his right arm, right leg,

and right side of face. At the autopsy a well-marked area of softening was found in the internal capsule, evidently the result of an embolism. The Wassermann reaction was positive.

A. NINIAN BRUCE.

**MENINGO-VASCULAR SYPHILIS ASSOCIATED WITH A RETRO-**  
(485) **OLIVARY SYNDROME.** R. M. STEWART, *Journ. of Mental Sci.*, 1915, July, p. 345.

A CASE presenting complete analgesia of the left side of face, right arm, leg, and trunk; diminution of tactile sensibility on right side of face; sensibility to heat and cold lost in same areas. The right inferior cerebellar artery was absent, while the vessel on the left side was irregularly thickened, and showed complete occlusion of the lumen. There was a destructive lesion in the medulla situated behind the inferior olive. This is minutely described, but the paper does not lend itself to a detailed description. The clinical and post-mortem report is an excellent contribution, and worthy of close study.

R. DODS BROWN.

**ON NERVOUS COMPLICATIONS IN TREATED SYPHILIS.** (Con-  
(486) tribution à l'étude des accidents nerveux dans les syphilis traitées.) G. L. RAMEAU, *Thèses de Paris*, 1914-15, No. 24.

IN syphilis treated by mercury or iodides nervous complications as a rule either do not occur or develop late, whereas in cases treated by arsenical compounds, tabes and general paralysis frequently occur three or even two years after the onset of syphilis.

The thesis contains the histories of eight cases, including one recently reported by Nowicki (*v. Review*, 1914, xii., p. 501).

J. D. ROLLESTON.

**THE SUBSTITUTES FOR SALVARSAN AND NEO-SALVARSAN.**  
(487) E. G. FRENCH, *Journ. Roy. Army Med. Corps*, 1915, xxiv., May, p. 448.

THE substitutes are kharsivan and neo-kharsivan, both of which are said to be identical in chemical composition with salvarsan and neo-salvarsan, and a third product, "billon," of French origin.

The author has used these for many weeks, and reports that the clinical results are quite as rapid and satisfactory as with salvarsan and neo-salvarsan, and can be safely recommended for the treatment of syphilis. He recommends four weekly injections of 0.4 gm. kharsivan, or 0.6 gm. neo-kharsivan, or five weekly injections of 0.3 gm. kharsivan.

A. NINIAN BRUCE.

**ON GALYL, A SUBSTITUTE FOR SALVARSAN AND NEO-**  
(488) **SALVARSAN.** ARTHUR FOERSTER, *Lancet*, 1915, Sept. 18, p. 645.

GALYL, which was discovered by Dr Mouneyrat, is a derivative of arseno-benzol. The writer considers this drug quite as efficacious as salvarsan with regard to the symptomatic effect upon primary and secondary lesions.

The ill-effects which may result from its use are noted.

R. DODS BROWN.

**THE CHOLESTEROL CONTENT OF CEREBRO-SPINAL FLUID.**

(489) PAUL G. WESTON, *Journ. Med. Research*, 1915, xxxiii., Sept. p. 119.

EIGHTY-FIVE fluids were examined from all types of case. All contained some cholesterol. Neither the quantity of fluid nor the quantity of cholesterol bears any constant relation to the psychosis, and the individual variation for each psychosis is considerable.

The average amount of fluid found in cases of paresis and arteriosclerotic dementia was greater than in the other cases. The average amount of cholesterol for cases of epileptic psychoses, dementia præcox, and organic dementia was greater than for cases of paresis, senile dementia, and manic-depressive psychoses.

A. NINIAN BRUCE.

**LUMBAR PUNCTURE IN AURAL AND NASAL CASES:**

(490) **PATHOLOGY OF THE FLUID.** WYATT WINGRAVE, *Journ. of Laryngol., Rhinol., and Otol.*, 1915, xxx., July, p. 270.

FIFTY per cent. of cases of septic meningitis and brain abscess can be traced to the ear, nose, or their accessory sinuses. The fluid obtained by lumbar puncture is the subarachnoid, not the intraventricular. It is difficult to estimate the exact capacity of the subarachnoid cistern, but as much as 100 ccs. have been collected at one time. It should be examined chemically, microscopically, and bacteriologically. A short description how to do so is given.

A. NINIAN BRUCE.

**PARAGEUSIA AND ITS TREATMENT.** THOMAS F. REILLY, *N.Y.*

(491) *Med. Journ.*, 1914, c., Nov. 28, p. 1061.

PARAGEUSIA means bad taste experienced by a person when there is no material in the mouth to account for it. The author is convinced that persistent bad taste in the mouth is always an expression of a serious toxæmia.

A. NINIAN BRUCE.

**HYSTERICAL ASTASIA-ABASIA OCCURRING IN ACUTE (492) MULTIPLE NEURITIS.** CHARLES W. BURR, *N.Y. Med. Journ.*, 1914, c., Dec. 26, p. 1245.

A DESCRIPTION of the case of a man, aged 45, who suffered from both multiple neuritis and hysterical ataxia. His hereditary history was very bad, and he had recently passed through an acute transitory insanity of some kind, which was considered to be due to alcohol. The neuritis was probably also alcoholic, and the author is inclined to think that the hysteria was due to the same cause, and was not secondary to the neuritis. The neuritis itself, if a cause, could only have acted by auto-suggestion, *i.e.*, finding he had a real trouble in walking, he suggested to himself to be ataxic, but his mental calibre was thought to be too small to create such a complex auto-suggestion.

A. NINIAN BRUCE.

**WARFARE INJURIES AND NEUROSES.** Sir WILLIAM MILLIGAN (493) and F. H. WESTMACOTT, *Journ. of Laryngol., Rhinol., and Otol.*, 1915, xxx., Aug., p. 297 (6 figs.).

WHEN shrapnel has become deeply embedded in the bony framework of the face, nose, or that part of the vertebral column corresponding to the pharynx, and is causing no hæmorrhage nor sepsis, it is severely left alone. If it were quite superficial and accessible, it was removed.

A number of interesting cases are briefly described with skiagrams showing the position of the bullet. "Concussion deafness" is merely a passing phase in the temporary abolition of sensory impulses in a brain, already anæmic as the result of physical fatigue and mental strain. Nine of ten cases of the deaf and dumb state all recovered within six weeks. The abrogation of function is not due to any organic lesion, but to a temporary suspension of neurone impulses from the higher cortical cells of the central nervous system to the peripheral. In functional aphonia there is no paresis of the adductors as in true hysterical aphonia; there is a total inability to put the vocal cords in motion. Something has happened, probably in the cortical cells of the centres for speech, to prevent volitional impulses necessary to set the machinery of speech in action.

A. NINIAN BRUCE.

**PSYCHOSES OF THE FEEBLE-MINDED.** H. V. WILDMAN, Jun., (494) *Journ. Nerv. and Ment. Dis.*, 1915, xlii., Aug., p. 529.

A VERY brief and summary paper, pointing out that, in the feeble-minded, psychoses occur similar in nature but different in degree from those afflicting normal individuals.

D. K. HENDERSON.

**THE CEREBRAL MECHANISM OF SPEECH. (Preliminary Note.)**

(495) F. SANO, *Proc. Roy. Soc. Med.*, 1915, viii., June (Sect. of Psychiat.), p. 71.

THE author describes five cases which illustrate destruction of cortical regions connected with speech functions, and which lend support to the following conclusions.

Although the distinction between motor and sensory aphasia can be generally made, and is of importance for the problem of localisation, attention must be called to paraphasia occurring in cases of motor aphasia, and difficulties in utterance occurring in the cases of sensory aphasia.

Age has a great influence upon the symptoms and the recovery of speech defects. Young individuals rapidly accommodate the right hemisphere to the loss of the left, so that the symptoms are less accentuated. Old individuals have greater difficulties in accommodation; in the latter, isolated lesions without general diseases of the arteries are exceptional, and so the symptoms are, as a rule, more extended and recovery is more difficult.

Disturbances in sensory centres are of larger and more definite influence than those in the motor areas. A. NINIAN BRUCE.

**MENTAL DISEASE AND LANGUAGE. W. M'DONALD, Jr., *Journ.***

(496) *Nerv. and Ment. Dis.*, 1915, xlii., July and Aug., pp. 482 and 540.

THE author states that too little attention has been paid to language (vocabulary) as an index of mental deterioration and disorder, and believes that its more thorough analysis and investigation would prove a most useful "physical sign" of mental disease.

In the first part of this paper the normal vocabulary is analysed. Ten persons were selected from different walks of life, and with different grades of learning, all being of normal intellectual capacity, but chosen in such a way that a series should be formed, having at one end a scholar of the highest type, renowned for his command of language, and at the other end a woman of limited education of the grade of a domestic servant. In order that the results might be reasonably comparable, the subjects, both normal and abnormal, were requested to relate their personal histories from birth. Five hundred words were thus obtained from every subject (except from certain cases of organic brain disease where the vocabulary was extremely limited).

From normal persons the following data were obtained. The highest degree of variation was 262 different words in 500 (52.4 per cent.), the lowest 198 in 500 (39.6 per cent.). The average variation was 226.9 (45.38 per cent.).

There were used in 5,000 words:—

Nouns	-	-	-	-	-	1,088
Verbs	-	-	-	-	-	978
Pronouns	-	-	-	-	-	700
Adjectives	-	-	-	-	-	619
Prepositions	-	-	-	-	-	562
Adverbs	-	-	-	-	-	478
Articles	-	-	-	-	-	318
Conjunctions	-	-	-	-	-	229
Interjections	-	-	-	-	-	28
						<hr/> 5,000 <hr/>

It was found that persons of highest culture used a larger proportion of nouns than did those less educated, and that the number of nouns varied directly with the grade of culture.

In 500 consecutive words of the scholar there were 353 nouns, adjectives, prepositions, and articles, and but 147 verbs, adverbs, pronouns, interjections, and conjunctions, while the illiterate person used 162 of the *noun-adjective* group, and 338 of the *verb-adverb* class.

In the second part of this paper the child's vocabulary is considered and analysed, as was done with the normal vocabulary, and then the vocabulary in various types of mental disease is discussed. The series of vocabularies from the cases of dementia præcox and mania-melancholia have been completed and analysed, but in the present communication the results are not recorded. For purposes of comparison, twenty patients suffering from organic brain disease have been selected, and these have been divided into two groups, one made up of those cases so severely disordered that 500 consecutive words could not be obtained from each patient, the other group containing the patients able to furnish at least 500 consecutive words. In 5,000 words spoken by ten subjects in the latter group, an average of 164·3 different words was used by each person, an average considerably less than that of the normal child between the ages of 2 and 5 years (170·2), and far below the normal adult average. In these 5,000 words only 642 nouns were used, whereas ten normal adults used 1,088 nouns in the same number of words, and ten normal children used 1,053 nouns. In contrast in the 5,000 words there were 1,317 verbs, 339 more than in the same number of words used in the normal group.

There were also other minor differences.

D. K. HENDERSON.

## PSYCHIATRY.

**THE TREATMENT OF PARESIS AND TABES BY SALVAR-**  
(497) **SANISED SERUM.** HENRY A. COTTON, *Amer. Journ. Insan.*,  
1915, lxxii., July, p. 125.

IN this paper a comparison is drawn between spontaneous remissions in cases of paresis without treatment, and the remissions in treated cases. Out of 127 untreated cases, 5, or 3.9 per cent., had definite spontaneous remissions varying in time from one and a half to three years. On the other hand, out of 27 hopeful cases which were thoroughly treated during the last two years, 10, or 35 per cent., showed very definite remissions. This percentage covered only a period of two years, while the percentage of spontaneous remissions covered a period of seven years. The author has devised an interesting chart, which is shown, whereby the biological and clinical data can be compared at a glance.

The methods of treatment which have been employed and which are described in detail are:—

1. Original Swift-Ellis method.
2. Ogilvie modification.
3. Cerebral puncture or intracranial method by Wardner.
4. Bichloride of mercury serum by Byrnes.
5. Cotton methods—
  - (a) Administering Ogilvie serum by cerebral and intraventricular puncture.
  - (b) Administering bichloride of mercury serum by intracranial and intraventricular puncture.
6. Intraventricular administration of the serum, Hammond and Sharp.

The author's only criticism of the original Swift-Ellis method is that it cannot be given frequently enough owing to the danger of the intravenous injection.

The Ogilvie modification consists in mixing a known quantity of salvarsan with the blood serum outside of the body, instead of giving the salvarsan intravenously.

Wardner's method is a development of the technique for intracranial puncture as suggested by Levaditi, Marie, and Martel in December 1913. The clinical results of Wardner are described as excellent, but still he was unable to reduce the globulin content, or to influence very materially the Wassermann reaction in the spinal fluid. The author has been unable to produce any results by this method in cases where the intraspinal method failed. The advantage claimed for this method is that fewer treatments are required than by the others.



For the bichloride of mercury method Byrnes claims that as good results can be obtained with it as with salvarsan. The method consists in collecting the serum from about 6 oz. of blood, centrifuging it, inactivating it at 56° C. for one half-hour, and adding to it  $\frac{1}{10}$  gm. of mercury. The serum is then ready for intraspinal injection.

The author's methods are simply slight modifications of the above methods.

For 31 cases that have been treated for at least six months the following statistics are given :—

1. Arrested cases	-	-	11	35·5 per cent.
2. Much improved	-	-	7	22·5 „
3. Not improved	-	-	7	22·5 „
4. Died	-	-	6	19·5 „

The duration of the arrested cases previous to treatment varied from one month to three years; some had been expansive, others depressed, and others again had shown a mild degree of dementia without any particular affective state.

The greatest number of treatments given in one case was 33, and the least number of treatments was 8, but both these cases are still under treatment.

Careful cerebro-spinal fluid and blood examinations have been made throughout the treatment of each case, and the results are recorded. This paper will be concluded in the next number.

D. K. HENDERSON.

**PEMPHIGUS IN A PARETIC.** MAX. A. BAHR and F. C. POTTER, (498) *Journ. Nerv. and Ment. Dis.*, 1915, xlii., July, p. 455.

THE case is reported of a married man, 51 years of age, a painter by occupation, who presented both mentally and physically the characteristic symptoms and signs of general paralysis. He gave a history of having had one attack of lead poisoning. At the age of 20 he seemingly contracted an extragenital chancre, but denied ever having suffered from any secondary manifestations. On 2nd June 1914, after scrubbing the back with soap and water, followed by alcohol and tincture of iodine, a lumbar puncture was done, and on the following morning a single bleb 5 in. above and 2 in. to the left of the point punctured was noted. On the following day other blebs appeared on the back, the scalp, the chest, and in the axillæ. These blebs presented a circular base, and were filled with clear, pale yellow fluid, which escaped on puncture. Fresh crops of blebs appeared from time to time, but by 11th August all the blebs had disappeared.

The author seems to incline to the view that the case is one of simple, non-specific pemphigus occurring incidentally in a syphilitic, rather than one of bullous syphilide of very late occurrence in an individual with an acquired syphilis.

Excellent photographs of the condition are reproduced.

D. K. HENDERSON.

**THALAMIC GLIOSIS IN DEMENTIA PRÆCOX.** M. E. MORSE,  
(499) *Amer. Journ. Insan.*, 1915, lxxii., July, p. 103.

TEN cases of dementia præcox were selected who had died sufficiently young to exclude ordinary senile and arterio-sclerotic changes in the brain, and from causes which would not produce confusing nervous lesions. A control series of seven cases of approximately the same ages was prepared, this consisting of two cases of depression at the involutional period of life, two of epilepsy, and one each of manic-depressive psychoses, imbecility, and chronic alcoholism with delirium tremens. Two cases of cerebral arterio-sclerosis, and one each of senile dementia and senile deterioration in manic-depressive insanity were added merely to estimate the degree of gliosis to be expected in these conditions.

In regard to the method of examination a rectangular block of tissue was cut from each hemisphere, passing anteriorly through the anterior commissure, posteriorly just behind the pulvinar, and above along the under surface of the corpus callosum.

Below, the block included the hypothalamus, corpora quadrigemina, and the cerebral peduncles. Each large block was then cut in the frontal plane into four segments, which were hardened in alcohol and embedded in paraffin. One set of sections was stained with thionin for the cells, while the other was put for twenty-four hours in Zenker's fluid and stained by Mallory's phosphotungstic-acid-hæmotoxylin method for neuroglia. For comparison with the thalamic routine, sections were taken from six cortical areas, and from the cerebellum, medulla, and three levels of the chord.

In addition to the pathological reports the clinical history of the cases is briefly given. The pathological reports are rather inconclusive, but the author concludes with the statement that some cases of dementia præcox in the fifth and sixth decades show a gliosis in the thalamus which is more advanced and active than in other parts of the nervous system. This gliosis may be both peripheral and focal. Patients with other psychoses who died at about the same ages did not in the cases examined present a similar thalamic gliosis.

D. K. HENDERSON.

**THE CATATONIC TYPE OF DEMENTIA PRÆCOX: THE GENESIS (500) OF AUTO-INTOXICATION IN THE CATATONIC TYPE OF DEMENTIA PRÆCOX FROM A HEREDITARILY TRANSMITTED DEFECTIVE BIOCHEMISM.** G. DUNLOP ROBERTSON, *Journ. of Mental Sci.*, 1915, July, p. 392.

THE suggestion is made that the chromaffin cells which secrete adrenalin, and which are innervated by the sympathetic, exhibit a relative "irritability of weakness," and that there is a hypersecretion of adrenalin which is a vaso-constrictor and a toxin.

In hebephrenia there is a cerebral anæmia brought about by this secretion, while in catatonia there is a cerebral and general somatic toxæmia due to a greater excess of the adrenalin.

The writer found that potassium bichromate gives a brown coloration when mixed with a solution of adrenalin chloride. A saturated solution of the bichromate was taken, and a few drops of it were introduced into a tube containing blood serum from a catatonic patient. A brown coloration appeared. This reaction was not obtained in a control case when blood from a non-catatonic patient was used. Owing to a scarcity of suitable cases further tests were not carried out.

R. DODS BROWN.

**OPTIC NEURITIS AND THE COLOUR FIELDS IN THE (501) DIAGNOSIS OF SYPHILIS, NEURASTHENIA, HYPERTHYROIDISM, DEMENTIA PRÆCOX, MANIC-DEPRESSIVE INSANITY, AND THIRD GENERATION SYPHILIS.** HAYWARD G. THOMAS, *Amer. Journ. Insan.*, 1915, lxxii., July, p. 59.

IN view of the rather extraordinary observations of the author, it may be well at once to state that the type of neuritis here described is of a mild, non-inflammatory type. He believes that every optic disc without a physiological cup, or with a faintly marked one, should be considered abnormal. In investigating the discs and colour fields of certain suspected cases of brain tumour, neuritis was found to be present, and their colour fields presented the characteristic contracture and interlacing. Later, all these cases proved to be cases of cerebro-spinal syphilis. Other patients suffering from chronic headaches, nervous symptoms, neurasthenia, &c., were then examined, and all showed the marked contraction and interlacing of the colour fields and optic discs without physiological cups, though few had swelling or marked changes in the blood vessels. In all the characteristic cases cerebro-spinal syphilis was proven, and all were promptly relieved by vigorous anti-syphilitic treatment.

The author believes that neurasthenia is absolutely caused by syphilis; that dementia præcox, manic-depressive insanity, and

general paralysis are only different grades of the same disease; that insanity is cerebro-spinal syphilis of different degrees; that hyperthyroidism, hypothyroidism, intestinal nephritis, and chronic sinusitis are but symptoms that appear in syphilis, &c. &c.

The above amazing statements are made because the author claims to have found almost identical disc changes and colour field abnormalities in all these different affections. At first the Wassermann or Noguchi test was made to prove the diagnosis, but as in almost half the number a negative report was returned, it apparently was discontinued. Further comment is needless.

D. K. HENDERSON.

**SYPHILIS AS THE ETIOLOGICAL FACTOR IN THE SO-CALLED**  
(502) **FUNCTIONAL NEUROSES AND PSYCHOSES.** J. DON BALL,  
*Amer. Journ. Insan.*, 1915, lxxii., July, p. 93.

THE author states that neurasthenia is of syphilitic origin either acquired or hereditary, and that migraine, exophthalmic goitre, dementia præcox, and manic-depressive insanity are of syphilitic origin. The above assertion is apparently principally based on the eye-examinations by Dr Hayward Thomas (whose paper is abstracted above), and on the presence in a fairly large percentage of cases of scaphoid scapulæ. He has greater faith in the Wassermann reaction than Dr Hayward Thomas, and hopes in the future to report both on the blood and on the spinal fluid.

D. K. HENDERSON.

**SOME FREUDIAN CONTRIBUTIONS TO THE PARANOIA**  
(503) **PROBLEM.** C. R. PAYNE, *The Psychoanalytic Review*, Vol. i.,  
pp. 76-93, 187-202, 308-321, 445-451; Vol. ii., pp. 93-101, 200-202.

IN a continued series of six articles Payne gives a useful critical digest of the psycho-analytic contributions that have been made to the problem of paranoia by Freud, Ferenczi, Bleuler, Maeder, Grebelskaja, and other writers. Those readers to whom the original writings are not available can be referred to this series as an accurate presentation of the chief conclusions reached by this line of study. These are, very shortly, as follows: The delusions of paranoia are not symptoms of the disease, as is often thought, but are healing processes, and represent attempts on the patient's part to reconstruct his conception of the world, a conception which has been impaired by the disease process. The most characteristic psychological feature is the thoroughgoing extent to which projection is made use of for this purpose, the patient ascribing to other people thoughts and feeling-attitudes that originate in the unconscious region of his own mind, but which are intolerable to his consciousness. Side by side with this goes the

mechanism of inversion, by means of which the mental processes in question are presented in exactly the opposite form to their original one, typically love being converted into hate.

A mass of evidence, which Payne regards as convincing, has been published, showing that there is an inherent connection between paranoia and internal conflicts on the subject of homosexuality, and the conclusion is reached that paranoia is always to be considered as one of the typical outcomes of repressed homosexuality, *i.e.*, homosexuality, knowledge of which the patient strives to keep from his consciousness. The delusions themselves are considered to be defence constructions erected against the homosexual tendency, and they are explained in a surprisingly simple way. The three most characteristic of the paranoid delusions are those of persecution, of jealousy, and of erotomania; accompanying all these is a chronic megalomania. These recognised forms of paranoia all represent contradictions of the homosexual attitude, which may be described by the sentence, "I (a man) love him"; indeed they exhaust all possible formulations of this contradiction. (a) The delusion of persecution contradicts the verb of the sentence, inverting the love into hate, *i.e.*, "I hate him." The characteristic projection renders this "He hates (and persecutes) me," whereupon the patient feels justified in taking measures for his own protection. Observation leaves no doubt that the person who is supposed to persecute the patient is someone towards whom the latter was previously attracted, or else an obvious replacement of such a person. (b) The erotomania contradicts the object of the sentence, inverting the sex so that it reads "I love her." Projection renders this "She loves me," and we get the typical delusion of the paranoid that he is being pursued by some lady's attention. (c) The delusion of jealousy contradicts the subject of the sentence, making it run, not "I love him," but "She loves him," and he suspects his wife, first in regard to the man or men who attract him, and later in a generalised form with numbers of men. (d) A fourth contradiction is possible, one in which all external love is denied, and the sexual hunger returns to the patient's self, leading to the self-overestimation of megalomania.

The regression in paranoia reverts to the early infantile stage in which the bridge of homosexuality is being formed between the original auto-erotism and the later normal hetero-erotism. A further regression would arrive at the auto-erotic stage itself, which clinically would be dementia præcox (paraphrenia), thus explaining the common clinical finding that paranoid symptoms frequently constitute a phase in the development of paraphrenia.

ERNEST JONES.

**THE "AMNESTIC" OR "KORSAKOW'S" SYNDROME, WITH**  
(504) **ALCOHOLIC ETIOLOGY.** J. M. MOLL, *Journ. of Mental Sci.*,  
1915, July, p. 424.

AN interesting study of the symptoms of thirty cases, with remarks on the differential diagnosis, prognosis, and treatment.

R. DODS BROWN.

**ON THE RELATION OF PSYCHIATRY TO THE STATE.** SAMUEL  
(505) E. SMITH, *Amer. Journ. Insan.*, 1915, lxxii., July, p. 1.

IN this the presidential address of the seventy-first annual meeting of the American Medico-Psychological Association, attention is drawn to the interest society has in recent years shown in the progress of psychiatry; it is remarked that it is the largest, costliest, and best directed charity that the world has ever known. In New York, Delaware, and Virginia states care is complete, in most of the other states it approximates completion, and the results justify beyond question the value of the system over the earlier, incomplete, local methods of care administered by trustees and overseers of the poor. Approximately one person in every group of three hundred citizens is mentally disordered, and in some states the care of the insane is the largest item of public expenditure. It is pointed out how futile it is to try to prevent insanity simply by the segregation of the mentally disordered, while at the same time the feeble-minded and epileptic are allowed to be at large. Excluding the acute infections and the auto-intoxications resulting from disordered metabolism, the chief factors in the production of mental disorders are, in the order of their importance, *heredity, syphilis, alcoholism*, and other *drug habits*. The author shows how useless it is to make laws without the public being sufficiently educated in regard to them, and as an example points to legalised sterilisation which seems to have made little progress as a means of prevention, because it is too far in advance of popular opinion. The dissemination of scientific knowledge, the segregation of the feeble-minded and delinquent, the medical inspection of school children, the establishment of mental hygiene societies, and the development of after-care work are all useful methods of educating the public, and are heartily and thoroughly recommended.

D. K. HENDERSON.

**RECENT EXTENSION OF OUT-PATIENT WORK IN MASSA-**  
(506) **CHUSETTS' STATE HOSPITALS FOR THE INSANE AND**  
**FEEBLE-MINDED.** L. VERNON BRIGGS and A. W. STEARNS,  
*Amer. Journ. Insan.*, 1915, lxxii., July, p. 35.

AN attempt has been made in Massachusetts to establish out-patient clinics in connection with the state hospitals for the

insane and feeble-minded. During a period of seven months outpatient departments and clinics have been established in the several large cities in the district of each state hospital, so that now virtually the whole state has been covered.

Social service or after-care workers are in attendance at these clinics, and their duties consist, not only in investigating and helping the new cases, but also of supervising those patients discharged from the state hospitals. Already this interesting and valuable piece of work has proved a great success, not only by educating the public in regard to mental hygiene, but also by allowing patients to be discharged from the state hospitals much earlier than they otherwise would. Statistics and tables are given.

D. K. HENDERSON.

**SOME NEGLECTED PHASES OF IMMIGRATION IN RELATION (507) TO INSANITY.** A. J. ROSANOFF, *Amer. Journ. Insan.*, 1915, lxxii., July, p. 45.

THE author's summary and conclusions are partly as follows: it is a fact that practically everywhere in the United States the foreign-born population furnishes a much larger proportion of insane hospital inmates than the native population.

The main object of this study is to determine whether this fact is due to a greater inherent tendency among the foreign-born to develop mental disease, or to some other conditions.

It is found that the difference in age distribution which exists between the native and foreign-born parts of the population accounts largely, but not wholly, for the difference in the proportion of insane hospital inmates.

It is found that this difference is further but still not wholly accounted for by the greater proportion of town-dwellers among the foreign-born than among the native population.

Upon eliminating the errors resulting from these disturbing factors, there remains but a slight difference between the native and foreign-born parts of the population in the incidence of certified insanity.

It is thought that this remaining slight difference may be accounted for by the heavy stress entailed in migration, and in the subsequent process of adjustment to new conditions and more exacting standards of living, and possibly by other less obvious disturbing factors.

D. K. HENDERSON.

## Reviews

**SYMPTOMATOLOGICAL DIFFERENCES ASSOCIATED WITH**  
(508) **SIMILAR CEREBRAL LESIONS IN THE INSANE AND**  
**VARIATIONS IN DISTRIBUTION OF THE MOTOR**  
**CENTRES.** SHEPHERD IVORY FRANZ, *Psychological Monographs*,  
No. 81. Psychological Review Company, Princetown, N.J.

THE first paper deals in detail with the autopsy and clinical records of thirty-eight cases of insanity (selected from 3,300 records) in which the atrophy was localised in one special region of the cortex and in which there was no other gross lesion of the cerebrum or nervous system—in fact, the cerebral atrophy as defined by Blackburn. These cases comprised examples of dementia præcox, general paralysis, arteriosclerotic dementia and senile dementia. The symptoms present during life are graphically described. Although all these cases exhibited atrophies which always included the frontal cerebral convolutions, and some also included atrophies of the neighbouring central and parietal portions of the cerebrum, no one symptom was found to be constant, with the possible exception of that complex condition called dementia, and many cases in which the atrophy was of slight extent were as demented as those in which the atrophy was more extensive. The extent of the atrophy is not the determining element in the production of the collection of symptoms which give warrant for the diagnosis of the “form” of the disease nor was there any correlation between the amount of atrophy present and the motor and affective states, the presence of delusions or hallucinations, memory or orientation ability.

The second article deals primarily with the areas concerned with the anterior and posterior limbs, and occasionally with the associated movements of the tail. The results of the author's experiments (on the brains of monkeys) are given in four divisions: (1) the total extents of the stimuable areas for the arm and leg; (2) a comparison of the distribution for the leg and for the arm; (3) a comparison of the distributions of the areas for the smaller segments (fingers, hand, lower arm, upper arm, toes, foot, lower leg, and thigh); and (4) the anomalous distribution of the stimuable areas, namely (*a*) those areas which gave leg movements when the surrounding areas gave arm movements, (*b*) those areas which gave arm movements when the surrounding areas gave leg movements, and (*c*) the non-stimuable areas which were surrounded by readily stimuable areas.



The methods employed and the experimental results are minutely detailed and illustrated by excellent diagrams drawn to scale.

The author is of the opinion that "we must rid ourselves of any preconceived notions regarding the fixity or definiteness of connection" in considering the function of the cerebrum. There is anatomical but not physiological fixity. A cell may be conceived to discharge in one direction along one collateral and at another time in another direction along another collateral.

The difference in symptoms which are associated with similar cerebral lesions may be similarly explained. The facts warrant the conclusion that the same forms of behaviour are not always due to the activities of the same cerebral cells. That "the variability in the functional cerebral connections should ever have been considered doubtful is probably due to the phrenological views which have influenced, and in fact pervaded, all neurological literature for many years."

H. DE M. ALEXANDER.

**THE MENTAL DEFICIENCY AND LUNACY (SCOTLAND) ACT, (509) 1913. With Introduction, Notes, and Appendices. J. EDWARD GRAHAM. Pp. 295. William Hodge & Co., Edinburgh and Glasgow. 1914. Price 12s. 6d. net.**

THE fact that this work is associated with the name of Sheriff Graham is sufficient to establish it as the standard work on the subject. The Act itself is here given with explanatory notes and references to other sections where required. The regulations and forms for the administration of the Act, which have been issued by the General Board of Control with the approval of the Secretary for Scotland, and by the Education Department, are given in appendices, as well as certain sections of Acts connected with, or affected by, the Act of 1913.

We have no hesitation in recommending this book to all to whom important powers and duties are entrusted under the Act. It presents the whole subject in a way which is easy to follow and to understand, and the explanations are concise and clear. The reader does not feel he is lost in a maze of words whose meaning and interpretation he cannot grasp. The introduction is worthy of close attention, and the difference between the necessary procedure in the case of certification of lunacy, which requires two medical signatures, and proof of the soundness of the opinions expressed by (1) "facts indicating insanity observed by themselves," and (2) "facts communicated by others," is compared with the certification of defectives, which merely requires the statement that the person in question "is a defective" without giving any reasons for the opinion.

The type is excellent and the whole get-up of the book is all that can be desired. It ought to be on the shelf of all Parish Councils and District Boards of Control, to whom, along with all those affected by the Act, it ought to prove invaluable.

**THE PSYCHONEUROSES AND THEIR TREATMENT BY PSYCHOTHERAPY.** (510) Prof. J. DÉJÉRINE and Dr E. GAUCKLER. Authorised translation by Smith Ely Jelliffe. Second English edition. J. B. Lippincott Co., Philadelphia and London. Price 18s. net.

WE have already reviewed both the original French edition (*v. Review*, 1912, x., p. 503) and the first English edition (*v. Review*, 1913, xi., p. 613), and have pointed out the high opinion which we hold of this book. It is with great pleasure that we are able to announce this early issue of a second English edition, which is, of course, merely a repetition of the first English edition. The subject of the psychoneuroses is here treated from the point of view of the minor psychic disturbances, which if promptly and properly handled, result in complete cure without any resource being necessary to the more elaborate methods of psychoanalysis. The special teachings of Freud are thus not referred to, and the work consists mostly of a record of the authors' own experiences with numerous cases drawn from their unrivalled clinical opportunities.

The book should prove of value to all who come in contact with the treatment of functional nervous disease.

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#### BOOKS AND PAMPHLETS RECEIVED.

Collected Contributions, 1914. (a) Psychopathic Hospital (Department of the Boston State Hospital); (b) State Board of Insanity. 1915. Boston, Massachusetts.

Déjérine, Prof. J., and Gauckler, Dr E. "The Psychoneuroses and their Treatment by Psychotherapy." Authorised translation by Smith Ely Jelliffe, M.D. Second English edition. J. B. Lippincott Co., Philadelphia and London. Pr. 18s. net.

Healy, William. "The Individual Delinquent." A textbook of diagnosis and prognosis for all concerned in understanding offenders. William Heinemann, London. Pr. 21s. net.

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We have to express our regret that on account of an error on the part of the printers, the name of Dr C. B. Burr was erroneously inserted after the review on "Carcinoma of the Thyroid in the Salmonoid Fishes" in the last number of the *Review* (August, p. 407).

**Review**  
of  
**Neurology and Psychiatry**  

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**Original Articles**

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**AN ANATOMICAL SEARCH FOR IDIOPATHIC  
EPILEPSY.**

**Being a First Note on Idiopathic Epilepsy at  
Monson State Hospital, Massachusetts,\* U.S.A.**

By D. A. THOM, M.D.,  
Pathologist to Monson State Hospital,

AND

E. E. SOUTHARD, M.D.,  
Pathologist to the State Board of Insanity, Mass., Director of the  
Psychopathic Hospital, Boston, Mass., and Bullard Professor  
of Neuropathology, Harvard Medical School, Boston, Mass.

*Read before the National Association for the Study of Epilepsy, Old  
Point Comfort, Va., 10th May 1915.*

(From the Laboratory of the Monson State Hospital, Monson, Mass.)

**GENERAL METHOD OF THIS STUDY.**

THE logical method of this study was borrowed from similar studies in the field of insanity.<sup>1</sup> These studies, carried on in the pathological service of the State Board of Insanity of Massachusetts,<sup>2</sup> had as their object an anatomical approach to

\* Being a contribution from the *State Board of Insanity*, whole number, 46 (1915, 12). The previous contribution was 1915, 11, by E. E. Southard and M. M. Canavan, entitled "Notes on the Relation of Somatic (Non-Neural) Neoplasms to Mental Disease," published in the *Interstate Medical Journal*, Vol. xxii., No. 7, pp. 738-751, July 1915.

the problem of the functional psychoses, so-called. In the field of epilepsy a similar study confronts the idiopathic group, so-called. The same anatomical approach to the problem of feeble-mindedness, notably of the higher grades, "where little or nothing can be found in the brain," should be made as soon as possible.<sup>3</sup> It is conceivable, too, that the method might be applied to criminal anthropology, in so far as it studies somatic anomalies.<sup>4</sup>

The method consists in dividing one's available anatomical material, so far as this consists of clinically well-described cases, into two groups, group A to consist of cases with well-marked coarse brain lesions, and group B to consist of cases without such lesions. If the problem were the usual one of matching up various clinical and anatomical findings in group A, we should find ourselves adopting the approved and classical methods of the localising neurologist; and we find ourselves with two sub-groups of cases—A1 in which the matching of symptoms and lesions seems successful, and A2 in which the matching has failed. But in dealing with group B (the normal-looking brain group), our refinements proceed in the opposite sense, for we are endeavouring to find cases in which it is both practically and theoretically impossible to do any matching of symptoms and lesions, just because, by hypothesis, there are no lesions. The further analysis of group B shows sub-group B1, in which, perhaps, a subsequent careful dissection or microscopic examination reveals suspicious conditions that *might* have had to do with the symptoms, leaving us with sub-groups B2, in which careful dissection and available microscopic methods fail to show anything at all adequate to explain the symptoms.

Groups A1 and B2, then, form the extreme members of the familiar threefold statistical division, leaving a group composed of A2+B1, which are insusceptible to present-day research methods.

Group B2, then, is a refined group of cases with normal-looking brains, in which a suitable group of *idiopathic* cases of *epilepsy* (as in the present study), or of *functional psychoses*, or of *feeble-minded having good brains that do not work well*, or of *environmental delinquents* may be sought. All the while, it goes without saying, one does not deny that many of the cases in group B1 or group A2, or even group A1, may be equally *idiopathic*, or *functional*, or *non-pragmatic*, or *environmental*. We

simply choose not to use these groups in working out the problem of "discords played on good instruments."

Is epilepsy (or, better, are certain forms of epilepsy) ever a *discord* played (*e.g.*, by some unknown physico-chemical condition) *on a good instrument* (*i.e.*, a brain destitute of anomalies, lesions, or other conditions of an epileptogenic nature)? What, then, is the further special nature of such cases?

That the brain of a patient who has been subject to epileptic attacks, perhaps daily for a decade without remission, will appear normal at the autopsy table, seems at first sight rather unlikely.

Add to the epilepsy feeble-mindedness and dementia, as well as frequent maniacal attacks (which often precede and follow the convulsions), and the structural normality of the brain must seem still more dubious.

The clinical manifestations of the disease are so spectacular that one looks for somatic findings to correspond. Yet we are confronted with a rather large group of cases wherein the duration has extended over a period of years, convulsions being frequent and severe, associated with maniacal attacks and other active mental symptoms: as delusions, hallucinations, &c., where the brain reveals little or nothing at autopsy to account for these various symptoms of mental disturbance.

The purpose of this note is (1) to present a series of more or less normal-looking brains and a series of abnormal-looking brains, with clinical data, and study these data comparatively to delimit the resulting problems; (2) to compare the results of this analysis with those obtained in the analysis of normal-looking brains in the sane; and (3) finally to take the residue of cases which, after careful study, appear to be truly idiopathic, both from a clinical and anatomical standpoint, and prepare a line of research which shall come still nearer to determining the genuineness of their idiopathic nature.

That we should be prepared to find few or no truly idiopathic cases of epilepsy is indicated by a frequently quoted generalisation of Allen Starr,<sup>5</sup> who, speaking of organic disease of the brain, says, "I believe that epilepsy is always an expression of such disease." Aldren Turner<sup>6</sup> goes almost as far, appealing likewise to "the inherited neuropathic predisposition revealed by well-marked stigmata of degeneration."

We are afraid, however, that some statements of this order

are only pious wishes. Some argue that epilepsy *must* be "organic," as others argue that insanity *must* be due to brain disease. The phenomena are so striking that these disputants feel that the burden of proof is on the man who argues against this generalisation.

Brilliant observations of an anatomical or surgical nature, as well as ingenious modern work in histology, fall far short of the 100 per cent. structural correlation which is the darling wish of numerous epileptologists. The work of Meynert,<sup>7</sup> Chaslin,<sup>8</sup> Clark and Prout,<sup>9</sup> Onuf,<sup>10</sup> John Turner,<sup>11</sup> L. W. Weber,<sup>12</sup> Alzheimer,<sup>13</sup> to mention only a few of the workers, as well as some work by Worcester,<sup>14</sup> and later by one<sup>15</sup> of the present writers, is all subject to the charge of dealing with too small groups or the most favourable cases. At any rate, we believe that the anatomical approach to idiopathic epilepsy has been neglected. If the structurality ("organic nature") of epilepsy is entirely a histological matter in any group of cases, it will be important to study such a group intensively. Could it be that the pertinent "changes" are "reversible" in a chemical or in some more general logical sense? Are the brains in the meantime between convulsions quite normal?

Our denominator consists of 205 random cases of clinically certain epilepsy, which came to autopsy during the years 1901 to 1914. The autopsies were performed by various hands, largely by Drs A. E. Taft, M. B. Hodskins, L. B. Alford, and D. A. Thom. The standards have varied somewhat, and a few cases in the series have had to be excluded for extraneous reasons.

The group is, however, entirely representative and unselected, and is, beyond question, a fair sample of institutional epilepsy drawn from all parts of Massachusetts.

✱ We found 129 instances of definitely abnormal-looking brains—brains of such an appearance that their possessors could not be safely taken to have idiopathic epilepsy. By this statement we do not mean that the abnormalities seen were the causes or effects of the epilepsy, or necessarily correlatable with the epilepsy. We regard them, however, as unsuitable for any more particular or intimate analysis of functional or idiopathic cases, simply because the lesions or anomalies found might be related with the epilepsy.

The residue of seventy-six cases shows normal-looking brains

—without marked chronic leptomeningitis or visible lesions of the brain substance, either acute or chronic.

The brains were not subject to extensive dissection at the autopsy table, as, for example, the majority of psychopathic subjects examined by Dr S. C. Fuller at Westborough<sup>16</sup>; by consequence it may be surmised that 37·1 per cent. (76 : 205) is rather too high a percentage of normal-looking brains, but it is evident that it is among these seventy-six that we must look for cases that shall be idiopathic epilepsy above reproach.

Perhaps the first point lodges in the question of dementia and feeble-mindedness.

	Normal.		Abnormal.	
	Number of Cases.	Per Cent.	Number of Cases.	Per Cent.
With acquired dementia -	35	...	46	...
With feeble-mindedness -	29	90	69	90
Without mental symptoms alone - - - -	4	...	1	...

Thus we find thirty-five normal-looking brains in which we must explain not merely the absence of lesions which might be correlated with the epilepsy, but also which might be related with dementia, and we must take into consideration that twenty-nine were regarded as feeble-minded to start with. We accordingly obtain a small residue of twelve cases which had normal-looking brains, but were neither feeble-minded nor demented. This latter group is the most promising for a study of truly idiopathic cases. The situation at this point presents two problems: Firstly, How can thirty-five cases of epileptic dementia be explained if the brains are not diseased? Secondly, Does the group of twelve cases without feeble-mindedness or dementia represent the problem of functional epilepsy?

Leaving for the moment the problem of dementia and normal-looking brains (perhaps more truly a psychiatric problem) let us consider the possibly idiopathic group. A superficial analysis shows four cases of this group with, not, to be sure, feeble-mindedness or dementia, but certain mental symptoms of an acute

nature, delusions, hallucinations, maniacal states, &c. It is clear that, however important these cases may be, they do not represent faithfully the idiopathic group of pure epilepsy.

We find ourselves, therefore, with a residue of eight cases without feeble-mindedness, dementia, or other psychotic symptoms. Four of these six cases must, however, be still further questioned before they gain admission to that group best suited for the study of idiopathic epilepsy. Two of these cases presented a mild chronic leptomeningitis of unknown duration. To prove an association between this condition and epilepsy would require special research; yet to relieve all doubt and suspicion in the mind of the most exacting critics, both cases may be, with regret, discarded. Another case (#699,04—4) had a paralysis of the left side of the face without any other symptoms organic in nature. She has been retained in the group with this explanation.

*Case* (#315,08—24).—The description of the convulsions in patient's record is rather suggestive of organic epilepsy. But otherwise the case meets all requirements of idiopathic epilepsy, both clinically and pathologically, and may be retained for further study.

Tables are here introduced giving some general and special facts covering these groups, here briefly termed "normal" and "abnormal."

#### IV.—TABULATION OF FINDINGS IN ABNORMAL AND NORMAL-LOOKING BRAIN SERIES.

The following tables give the general results of the inquiry:—

TABLE I.

Autopsied cases -	-	-	-	205
Brains, abnormal (substantial lesions) -	-	-	-	129
Brains, normal (no gross substantial lesions) -	-	-	-	76

#### 76 NORMAL-LOOKING BRAINS.

Males, 41.      Females, 35.

Normal-looking brains and coverings -	-	68
Normal-looking brains with leptomeningitis -	-	8



# ANATOMICAL SEARCH FOR IDIOPATHIC EPILEPSY 477

## *Brains and Coverings Normal Looking —*

Without mental symptoms	-	-	-	6
With dementia	-	-	-	30
With feeble-mindedness	-	-	-	28
With active mental symptoms *	-	-	-	4
				<hr/>
				68

## *Normal-Looking Brains, but with Leptomeningitis—*

Without mental symptoms	-	-	-	2
With dementia	-	-	-	5
With feeble-mindedness	-	-	-	1
With active mental symptoms	-	-	-	...
				<hr/>
				8

## 129 ABNORMAL BRAINS.

Males, 65.      Females, 64.

## *Abnormal Brains with Normal Coverings*

Without mental symptoms	-	-	-	12
With dementia	-	-	-	37
With feeble-mindedness	-	-	-	60
With active mental symptoms *	-	-	-	1
				<hr/>
				110

## *Abnormal Brains and Coverings—*

Without mental symptoms	-	-	-	1
With dementia	-	-	-	9
With feeble-mindedness	-	-	-	9
With active mental symptoms (alone)	-	-	-	...
				<hr/>
				19

TABLE II.—AGE AT ONSET.

	Normal.		Abnormal.	
Males -	41	} Average age of onset, 18.7 years.	65	} Average age of onset, 19.1 years.
Females -	35		64	
Total	<hr/> 76		<hr/> 129	
Age at onset -	72 cases. 4 unknown.		118 cases. 11 unknown.	

\* With active mental symptoms and also feeble-mindedness or dementia. seventeen cases.

TABLE II.—*continued.*

Age at Onset.	Normal.		Abnormal.	
	Number of Cases.	Per Cent.	Number of Cases.	Per Cent.
Under 1 year	4	5.5	13	11.0
From 1 to 3 years	12	16.6	23	19.4
" 4 " 5 "	4	5.5	5	4.2
" 6 " 10 "	4	5.5	18	15.2
" 11 " 15 "	18	25.0	11	9.3
" 16 " 20 "	9	12.5	7	5.9
" 21 " 30 "	5	6.9	11	9.3
" 31 " 40 "	5	6.9	9	7.6
" 41 " 50 "	6	8.3	10	8.3
" 51 " 60 "	2	2.7	5	4.2
" 61 " 70 "	2	2.7	3	2.5
" 71 " 80 "	1	1.3	3	2.5

TABLE III.—DURATION FROM ONSET.

	Normal.		Abnormal.	
	Number of Cases.	Per Cent.	Number of Cases.	Per Cent.
Under 2 years	...	...	...	...
From 2 to 4 years	4	5.5	2	1.7
" 5 " 9 "	5	6.9	18	15.2
" 10 " 14 "	16	22.2	20	17.0
" 15 " 19 "	12	16.6	17	14.4
" 20 " 24 "	16	22.2	12	10.1
" 25 " 29 "	9	12.5	15	12.7
" 30 " 34 "	6	8.3	12	10.1
" 35 " 39 "	...	...	3	2.5
" 40 " 44 "	...	...	8	6.8
" 45 " 49 "	2	2.7	5	4.2
" 50 " 54 "	...	...	4	3.3
" 55 " 59 "	1	1.3	1	.8
" 60 " 64 "	1	1.3	1	.8
Unknown	4	...	11	...

TABLE IV.—AGE AT DEATH.

	Normal.		Abnormal.	
	Number of Cases.	Per Cent.	Number of Cases.	Per Cent.
Between 10 and 20 years	9	11·8	21	16·2
"    21 " 30 "	24	31·5	26	20·1
"    31 " 40 "	11	14·4	17	13·1
"    41 " 50 "	15	19·7	15	11·7
"    51 " 60 "	5	6·6	29	22·4
"    61 " 70 "	7	9·2	11	8·5
"    71 " 80 "	5	6·6	7	5·4
Over 80 years	...	...	3	2·3
Average age at death	38·9 years		41·44 years	

TABLE V.—HEREDITY.

	Normal.		Abnormal.	
	Number of Cases.	Per Cent.	Number of Cases.	Per Cent.
Same heredity - -	9	13·8	16	12
Allied heredity - -	7	10·6	10	8
Alcoholic hist. in pat. -	8	12·5	13	10
Syphilitic hist. in pat. -	1	1·5	3	2·3
Alcohol and same heredity - - -	1	...	2	...
Alcohol and allied heredity - - -	2	...	2	...

Here "Same" heredity means epilepsy. "Allied" means other psychopathic conditions.

TABLE VI.- MENTAL STATUS.

	Normal.		Abnormal.	
	Number of Cases.	Per Cent.	Number of Cases.	Per Cent.
Demented - - - -	35	46	46	35.6
Feeble-minded - - -	29	38	69	53.5
Active mental symptoms.	1	5	1	1
Without mental symptoms	8	10	13	10
	76		129	
Active mental symptoms, with feeble-mindedness	21	...	1	...
Active mental symptoms, with dementia - - -	23	...	14	...

TABLE VII.—FREQUENCY OF CONVULSIONS.

	Normal.		Abnormal.	
	Number of Cases.	Per Cent.	Number of Cases.	Per Cent.
1 or less per month -	9	12	26	21.1
2 per month - - -	3	4	9	7.3
3 to 5 per month -	19	25.7	28	22.7
6 „ 10 „ -	13	17.5	22	17.8
11 „ 15 „ -	11	15	13	10.5
16 „ 20 „ -	6	8.1	9	7.3
21 „ 25 „ -	2	2.5	4	3.2
26 „ 30 „ -	4	5.4	5	4
31 „ 35 „ -	3	4	3	2.4
36 „ 40 „ -	3	4	1	.8
Over 40 „ -	1	1.3	3	2.4

TABLE VIII.—ASSIGNED CAUSES OF EPILEPSY.

	Normal.		Abnormal.	
	Number of Cases.	Per Cent.	Number of Cases.	Per Cent.
Head injuries - - -	7	9·1	13	10·0
Alcohol - - -	4	5·2	2	1·5
Encephalitis - - -	1	1·3	3	2·3
Scarlet fever - - -	3	3·9	2	1·5
Teething - - -	3	3·9	3	2·3
Menopause - - -	2	...	1	·7
Sunstroke - - -	...	2·6	...	...
Meningitis - - -	...	...	4	3·1
Hereditary syphilis - - -	...	...	...	...
Acquired syphilis - - -	...	...	1	·7
Cerebral hæmorrhage - - -	...	...	1	·7
Chorea - - -	...	...	1	·7
Indigestion - - -	...	...	1	·7
Measles - - -	...	...	...	...
Emotion, fright, grief - - -	2	2·6	4	3·1
Overwork - - -	1	1·3	3	2·3
Congenital - - -	...	...	6	4·6
Rachitis - - -	...	...	1	·7
Growth on frontal bone - - -	1	1·3	...	...
Unknown - - -	52	68·4	83	64·3

TABLE IX.—CAUSES OF DEATH.

	Normal.		Abnormal.	
	Number of Cases.	Per Cent.	Number of Cases.	Per Cent.
Pulmonary tuberculosis	9	11·7	12	10
Lobar pneumonia -	2	...	7	...
Broncho-pneumonia -	6	...	10	...
Pulmonary œdema -	4	...	14	...
Pulmonary thrombi -	...	...	1	...
Pulmonary abscess -	...	...	1	...
Pulmonary apoplexy -	...	...	1	...

TABLE IX.—*continued.*

	Normal.		Abnormal.	
	Number of Cases.	Per Cent.	Number of Cases.	Per Cent.
Asphyxia . . . . .	3	...	4	...
Chronic myocarditis . . . . .	2	...	3	...
Chronic endocarditis . . . . .	4	...	4	...
Acute dilatation of heart . . . . .	3	...	2	...
Cardiac paralysis . . . . .	1	...	1	...
Internal hæmorrhage . . . . .	...	...	1	...
Cancer of liver . . . . .	1	...	...	...
Chronic pericarditis . . . . .	...	...	1	...
Chronic internal nephritis . . . . .	...	...	1	...
Cirrhosis of liver . . . . .	...	...	1	...
Diabetes mellitus . . . . .	...	...	1	...
Peritonitis, acute . . . . .	...	...	1	...
Peritonitis, T.B. . . . .	...	...	1	...
Septicæmia . . . . .	...	...	2	...
Acute dilatation of stomach . . . . .	...	...	1	...
Acute gastro-enteritis . . . . .	1	...	1	...
Scald . . . . .	...	...	1	...
Drowning . . . . .	...	...	1	...
Cancer of prostate . . . . .	...	...	1	...
Meningitis, T.B. . . . .	1	...	...	...
Meningitis, cerebro-spinal . . . . .	...	...	1	...
General paresis . . . . .	...	...	1	...
Amyotrophic lateral sclerosis . . . . .	...	...	1	...
Cerebral hæmorrhage . . . . .	1	...	8	...
Cyst of brain . . . . .	...	...	2	...
Softening of brain . . . . .	...	...	2	...
Abscess of brain . . . . .	...	...	1	...
Tumour of brain . . . . .	...	...	1	...
Anæmia of brain . . . . .	...	...	1	...
Intestinal paralysis . . . . .	1	...	...	...
Epilepsy . . . . .	35	...	37	...
Gangrene . . . . .	1	...	1	...
Carcinoma . . . . .	1	...	..	...

## ANATOMICAL SEARCH FOR IDIOPATHIC EPILEPSY 483

TABLE X.—CORRELATION OF ALCOHOL AND EPILEPSY IN  
RELATION TO AGE AT ONSET.

	Normal.		Abnormal.	
	Number of Cases.	Per Cent.	Number of Cases.	Per Cent.
Congenital	3	23	...	...
Between 1st and 2nd year	1	7·7	1	4·5
" 2nd " 3rd "	2	15·4	3	13·7
" 3rd " 4th "	1	7·7	2	9·1
" 4th " 5th "	...	...	2	9·1
" 5th " 6th "	1	7·7	...	...
" 6th " 10th "	...	...	1	4·5
" 11th " 15th "	2	15·4	4	18·2
" 16th " 20th "	2	15·4	2	9·1
" 21st " 25th "	...	...	...	...
" 26th " 30th "	1	15·4	1	4·5
" 31st " 35th "	...	...	3	13·7
" 36th " 40th "	...	...	...	...
" 41st " 45th "	...	...	1	4·5
" 46th " 50th "	...	...	2	9·1

The groups of Table I. correspond to those mentioned in the first section of this note as follows:—

Group A, composed of 129 abnormal-looking brains.

Group A1, composed of 19 brains, as it were doubly abnormal, since both the brain substance and the nutrient membrane are diseased.

Group A2, composed of 110 cases with substantial lesions, not here further analysed. These two groups are without doubt very heterogeneous, but do not contribute readily to the idiopathic problem. Further study might throw many of group A2 into A1.

Group B, composed of 76 normal-looking brains, *i.e.*, without substantial lesions.

Group B1, composed of 8 brains substantially normal-looking but with chronic leptomeningitis, the significance of which lesion is questionable.

Group B2, composed of 68 brains substantially normal-looking and without chronic pial changes.

The following table shows our best approximation to an idiopathic group of sane epileptics, and is obtained by subtracting

from groups B1 and B2 all cases with feeble-mindedness, dementia, or acute psychotic symptoms.

The remaining 6 cases, already clinically idiopathic, must be further studied microscopically to prove that they are histologically intact. This work will be done and reported at a later date. In the summary of the present paper will be embodied some general and special facts covering a study of a comparative data between what is briefly termed normal and abnormal brains.

Summary and conclusions:—

1. Seventy-six of 205 brains of institutional, but otherwise unselected, epileptic subjects, *i.e.*, 37 per cent., yielded brains without substantial lesions visible to the naked eye upon superficial examination or dissection.

2. This percentage of "normal-looking" brains is rather higher than has hitherto been found in institutional, psychopathic, *non*-epileptic subjects, although the dissections in the epileptic group have probably not been so extensive as in the psychopathic group.

3. A study has been made of 76 epileptics with normal-looking brains, with the hope of securing a number of "idiopathic" cases for special examination.

4. In order to secure a group of pure epilepsy, 68 cases had to be excluded as being complicated with feeble-mindedness, acquired dementia, or other psychotic symptoms, leaving 8 apparently non-psychotic epileptics for study. Of these 8, 1 had facial palsy, 1 had organic-looking symptoms, and 2 had chronic leptomeningitis. Dismissing the 2 cases of chronic leptomeningitis, we have 6 cases from which a truly idiopathic brain, from a histological point of view, may be isolated, and it is upon these 6 brains that further study must be made.

5. The whole series affords an opportunity for general conclusions on certain classical questions of epileptology, *e.g.*:—

*Age at Onset*, Table II.—(a) Seventy-two cases out of a total of 76 with normal-looking brains where the age at time of first convulsions was known. *Eighteen* (25 per cent.) began between eleven and fifteen years, a period quite significant for the disturbance of the nervous system, already predisposed to psychochemical changes. *Of the 118 cases with abnormal brains, only 9.3 per cent. had their onset during this same period.* (b) The abnormal series show that the percentage of cases (11 per cent.) where the age at onset was under one year was twice as high



(5.5 per cent.) as the normal series (suggesting birth injuries and congenital defects). All those cases where the epilepsy began after the fortieth year were about equally divided between the normal and abnormal group.

*Duration of Epilepsy*, Table III.—The cases where the duration was of thirty-five years or more were divided as follows:—18.4 per cent. abnormal group; 5.3 per cent. normal group. Those with shorter durations were about equally divided between the two groups.

*Age at Death*, Table IV.—Average age of patient at time of death, in normal group, 38.9 years; abnormal group, 41.44 years.

*Heredity*, Table V.—Heredity present in 24 per cent. normal cases; 20 per cent. abnormal cases, being about equally divided in either group into the same and allied types of heredity.

*Mental Status*, Table VI.—Only 10 per cent. of the cases in either group that did not present mental symptoms, dementia being more frequent in the normal group (46 per cent.), while feeble-mindedness predominated in abnormal group (53 per cent.).

*Number of Convulsions*, Table VII.—Cases with minimum number of convulsions, one or less a month, belonged largely to abnormal series, while the cases where the convulsions occurred once a day or more frequently were usually found in the normal series.

*Assigned Causes of Epilepsy*, Table VIII.—The assigned causes varied so widely, and in so many instances were unknown, that the data were of little significance, excepting that head injuries was given as the cause in 9.1 per cent. in the normal series and in 10 per cent. in the abnormal series. Alcohol, normal series, 5.2 per cent.; abnormal series, 1 per cent. The causes of death were also so numerous that the data are of little importance, excepting that tuberculosis was the cause of death in about 10 per cent. of all cases in either group.

*Alcohol and Syphilis in Patients*, Table IX.—Alcohol, 12.5 per cent. normal group; 10 per cent. abnormal group. Syphilis, 1.5 per cent. normal group; 2.3 per cent. abnormal group.

We feel that, contrary to the expression of the numerous authors already quoted, there still remains some doubt that all epilepsies are organic in nature, and it has been the purpose of this note to introduce a more logical method of anatomical search for idiopathic epilepsy than has hitherto been applied to the problem.

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**THE VOICE SIGN IN TABES—TECHNIQUE OF  
ELICITATION. STUDIES IN NEUROLOGICAL  
TECHNIQUE, NO. 5.<sup>1</sup>\***

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In the present paper I propose to describe a new point in the examination of *tabes dorsalis*. This point is the method of eliciting the voice sign. Elsewhere, in a preliminary report (1), I have described in detail a case of the same disease, in order to show how there may be voice changes coincident with other non-vocal symptoms. In still another paper (2), I have described the tabetic voice sign in all the details which I have been able to observe, and I have given, in the same report, the data upon which that voice sign may be treated. In the present paper, as I have said, I am presenting the technique of elicitation.

Obviously, the method of elicitation should be simple and quick. With these two qualities it would be doubly useful: it would bring the voice sign of *tabes* to immediate notice, and it would furnish to the neurological clinic a routine test of some value.

The method which I am describing was evolved in the following way. I examined my patients' voices by a wide range of tests. From these tests I eliminated the less certain and less searching, saving only that which proved itself most generally applicable. I will explain the process briefly, to show the rationale of the final formula.

The broad series of tests begins with the five vowels. The physician should write them on a bit of paper, in the usual order, *a, e, i, o, u*, and ask the patient to sound them. The patient will usually name them instead, and should be corrected by a second request. If he still misunderstands, the physician should write on another slip the vowels with a word following each to illustrate the sound desired. Thus, "*a*" should be sounded as in around.

\* Read 28th August 1915 at the closing exercises of the summer course on Researches of the Year in the Voice Clinic, Boston.

"e" as in end, "i" as in ice, "o" in on, "u" in boot. From such a list the patient may readily sound them all. The tabetic will, of course, attempt to sound them in the normal fashion, correctly, but he will not get them quite right. This failure is a characteristic symptom of ataxia. It is caused by the fact that tabetics lose their sense of position. So, when they try to sound what they have in their minds they cannot quite force the vocal co-ordinations necessary to produce the particular cavity which each vowel enunciation demands. Hence they fall a little short of the vowel. If they have practised this test in any way they may notice the mistake themselves and attempt to correct it. This second effort may be nearer to the true vowel sound, or it may err in another direction by reason of over-effort. This secondary aberration is also characteristic of vocal ataxia.

After the vowels the author then tried the consonants. Here one will find more marked variations from the sound demanded than before. The reason is clear. Consonantal sounds are produced by exact co-ordination of vocal agents, and the minutest variations from that exact co-ordination changes the essential characteristic of the consonant. Therefore, among the consonants we find more marked and fairly constant changes. In making this test the physician should ask the patient to pronounce after him the words in the following list: mama, papa, baby, to-day, none, cargo, going. These sounds will bring out any marked ataxia that may appear in the voice. That is, they will elicit the two regular ataxic aberrations: elision and slovenliness. I can, however, reasonably conceive of a case in which these aberrations might be so slight as to be hardly perceptible to the unpractised ear. In such a case the examiner might try such consonantal combinations as Lenox, journals, zwieback, stricture, and the like. Cases that would not show ataxia in simple words would almost surely show them on these more complicated combinations of sounds.

In case the tabes sign is not elicited by this test, it should be sought by means of a sentence. The patient should be made to say it quickly in order that he may have no time for co-ordination, in case he is practised in such procedures. I suggest here the sentence, "Time and tide wait for no man."

This whole series of tests is based on the established theory that in vocal ataxia the pronunciation of vowels is affected a little,

that of single consonants somewhat more, and of difficult combinations of consonants very much more.

The ultimately acceptable test, which in the routine of a clinic is quite sufficient in itself, is derived from the preceding method of elicitation, and is especially desirable because it will almost surely elicit immediate tabetic signs if vocal ataxia is present. Like the broader one above, it is graduated, and in the same way it comprises the most difficult portions of each part of the series, and progresses from one to another until the tabetic sign appears. It includes a vowel, a consonant, a difficult consonantal combination, and a whole sentence with the same. This test, used in clinical routine, ought to show the sign slightly at first, then more markedly, and finally with great clearness. For this test I suggest the following series: "e" (as in eel), "t," "journal," "Time and tide wait for no man." I have chosen each member of the series because it demands from the vocal mechanism a definite effort for correct enunciation. The vowel requires a marked co-ordination; the consonant needs a very minutely adjusted position; the word contains a combination of consonants that forces the vocal organs to change at once from one delicate and precise co-ordinating position to another; and the sentence presents a quick succession, in a long series, of co-ordinating positions. I feel certain that no vocal ataxia could escape detection by this test.

A word should be said here about distinguishing vocal ataxia from other kinds of slovenly speech. It should not, for example, be confused with neglect lispings, with sigmatism, or with other forms of slovenly pronunciation. To avoid this danger it will be only necessary to discover the ataxic element. For in these other defects of speech we have the same aberrations from the normal repeated again and again, as if the individual had learned a certain consonant wrongly and was entirely unable to change the enunciation. This is true of all the speech defects mentioned above. In vocal ataxia, however, we have an entirely different phenomenon, a pathological element. It consists in striking a word at first in a slovenly fashion, next perhaps better, and a third time perhaps perfectly. At least there is an ataxic variation in enunciation that does not appear in the voices of those who have ingrained and established defects. In a word, then, our method of differentiation consists in determining whether the

aberration in enunciation is constant or variable. Upon this finding depends the diagnosis of ataxia.

*Summary.*—In summarising, let me once more call your attention to my papers on the characteristics (1) of the voice sign in tabes, and on the voice sign (2) itself as a characteristic symptom of ataxia. In the present paper I have confined myself entirely to the technique of elicitation of this voice sign. In final form the test resolves itself into this formula: Let the physician request the patient to utter the following sounds—"e" (as in eel), "t," "journals," and "Time and tide wait for no man."

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## Abstracts.

### ANATOMY.

**ON THE OCCURRENCE OF AN INTRACRANIAL GANGLION UPON (511) THE OCULOMOTOR NERVE IN *SCYLLIUM CANICULA*, WITH A SUGGESTION AS TO ITS BEARING UPON THE QUESTION OF THE SEGMENTAL VALUE OF CERTAIN OF THE CRANIAL NERVES.** GEO. E. NICHOLLS, *Proc. Roy. Soc.*, 1915, lxxxviii. (Biol. Sci.), p. 553.

THE author describes the occurrence in the brain of *Scyllium canicula* of a collection of ganglion cells upon the third nerve a little distance from its origin, and shows that such oculomotor ganglia are present, either as functional structures or as vestiges,

in widely separated vertebrate classes. Since ganglia, other than sympathetic, are known to occur normally only upon "sensory" nerves, or if upon mixed (motor and sensory) nerves, then upon the dorsal (sensory) root only, the question at once presents itself—what is the significance of the occurrence of ganglia upon the oculomotor root?

The oculomotor nerve has been mostly accepted as a purely motor nerve, and equivalent simply to the ventral root of a typical segmental nerve. Sherrington and Tozer, however, found that the muscle spindles in the intrinsic eye muscles pass into the nervous system by way of the oculomotor. Now the nerve fibres from all other spindles arise from ganglion cells of the dorsal spinal ganglia, and are thus connected with the central nervous system by way of dorsal nerve roots only.

The above oculomotor ganglia must be distinguished from the ciliary ganglia which lie in the orbit, and although connected with the oculomotor nerves, are generally recognised as being ganglia properly referred to the autonomic (sympathetic) system. The ciliary ganglion may not be strictly homologous in all species. In development, ganglion cells from the neural crest enter into association with the anlage of the oculomotor, apparently establishing a transient dorsal root, and certain ganglion cells migrate peripherally along the fibres of this nerve to the (sympathetic) ciliary ganglion, as do cells from a typical dorsal ganglion into a typical sympathetic ganglion, such cells having probably arisen primarily from the neural crest.

These facts constitute evidence in favour of the complete segmental character of this nerve, and the resemblance of the oculomotor (and other eye-muscle nerves) to a complete spinal nerve (including sensory as well as motor roots) is of great value in establishing the segmental character of the head metameris.

A. NINIAN BRUCE.

#### **A HITHERTO UNDIFFERENTIATED NUCLEUS IN THE FORE-**

(512) **BRAIN.** (*Nucleus subputaminalis.*) GIUSEPPE AYALA, *Brain*, 1915, xxxvii., p. 433 (8 figs.).

THE nucleus subputaminalis is a dense group of cells situated beneath the ventral portion of the putamen (portio media) at the point where this margin is crossed by the commissura anterior. It is flat in the vertical and curved in the horizontal plane. Transversely it measures at its greatest length at least 2 or 3 mm. It is bounded (*a*) dorsally by the inferior margin of the putamen, from which it remains separated by some ventral fibres of the capsula externa; (*b*) internally, in part (distally), by the

commissura anterior, and in part (proximally) by a fragment of the putamen which surrounds its medial extremity; (c) ventrally and externally by fibres of the capsula externa and distally by the complex ganglion mass which constitutes the limen insulae.

The cells of the nucleus are easily distinguished in the Nissl preparations from the adjoining grey matter by their morphology and structure. The most prevalent forms are oval, pyriform, and sometimes fusiform. They measure in greatest diameter 40 to 50  $\mu$ . The nucleus is of moderate size, poor in chromatin and always excentric. The cytoplasm is very rich in tigroid substance, which appears in the form of round masses, deeply staining, irregularly distributed and dense at the periphery or at the two poles, or as small granules sparsely distributed, and rarely continued into the dendrites.

Its morphological value and functional significance have still to be ascertained.

A. NINIAN BRUCE.

**A CASE OF UNILATERAL CEREBELLAR AGENESIA.** OLIVER  
(513) S. STRONG, *Journ. Comp. Neurol.*, 1915, xxv., Aug., p. 361  
(20 figs.).

THE brain was that of a girl, aged 3 years and 4 months. She was small, weak, and unsteady in her movements. She could walk, but with a staggering gait. There was marked bilateral nystagmus, mental weakness, and apathy, but no convulsions. Death was due to measles and broncho-pneumonia.

Externally the brain showed an almost complete absence of the left hemisphere of the cerebellum. The cause of the agenesis was not clear, but it was possibly due to some old, prenatal cyst, which occupied the space which should have been filled by the left cerebellar hemisphere.

The following structures were markedly defective: the greater part of the left cerebellar hemisphere, possibly part of the vermis and the left superior colliculus; the right inferior olivary nuclei, the right central tegmental tract, and the left corpus restiforme; the left middle cerebellar peduncle, the right pons nuclei, the right pes and the right substantia nigra; the left nucleus dentatus, the left superior cerebellar peduncle and the right nucleus ruber. All of these findings are simply confirmatory of the accepted views of the cerebellar connections. While uncrossed olivo-cerebellar and ponto-cerebellar connections are not entirely excluded, they either do not exist or are relatively inconsiderable, and the great majority at least of the olivo-cerebellar fibres are distributed to the cerebellar hemispheres.

The following structures usually supposed to be connected



with the cerebellum were found to be either normal or only slightly defective:—the dorsal and ventral spino-cerebellar tracts (the dorsal slightly defective on left), the arcuate nuclei (defective on right possibly), the ventral and ventro-lateral external arcuate fibres (possibly defective on left), the lateral reticular nuclei, the external nuclei of the column of Burdach and other nuclei of Goll and Burdach, the juxta-restiform bodies (vestibulo-vermis connections, possibly defective on left), the ponto-tegmental fibres and certain tegmental nuclei. These structures must thus be connected either with both cerebellar hemispheres, or mainly with the vermis. The afferent tegmento (?)—olivo-cerebellar and pallio-ponto-cerebellar paths are thus greatly affected, while the afferent paths from the periphery via spino-cerebellar paths to the vermis and from the vestibule to the vermis are largely intact. The efferent path from the cerebellar hemisphere, the dentato-rubral part, is similarly greatly affected, while the fastigio-bulbar path, more especially from the vermis, is not so much involved. The figures are good. A. NINIAN BRUCE.

## PHYSIOLOGY.

**ON THE ALLEGED INFLUENCE OF ADRENALINE AND OF**  
(514) **THE SYMPATHETIC NERVOUS SYSTEM ON THE TONUS**  
**OF SKELETAL MUSCLE.** YAS. KUNO, *Journ. of Physiol.*, 1915,  
xlix., Feb. 25, p. 139.

ADRENALINE up to a strength of 6:100,000 has no appreciable influence on the curve of contraction of the sartorius of the frog. The tonus of the hinder extremities is not altered by the injection of adrenaline or by division of the rami communicantes, whereas the loss of tonus in frogs after division of the anterior roots of the spinal nerves is always marked by a relaxation of the muscles of the affected side. Muscles which are still in connection with the spinal cord show on loading a gradual increase in length which may last thirty to forty minutes. Section of the rami communicantes does not alter the rate at which this takes place, but the phenomenon is practically abolished by previous division of the anterior roots. The muscles of a "cold frog," which are still in connection with the spinal cord, show a marked contraction remainder after each twitch, due to indirect excitation. The contraction remainder gradually disappears. Section of the rami communicantes does not alter this phenomenon, but section of the anterior roots almost abolishes it. A. NINIAN BRUCE.

**DIURESIS: THE PITUITARY FACTOR.** DOUGLAS COW, *Journ. of Physiol.*, 1915, xlix., Aug. 31, p. 441.

THE increase in diuresis which follows injection of extracts of duodenal mucous membrane is (a) independent of the salt content of such extracts, though such content may also produce an increased flow of urine; (b) indirect; (c) dependent on activity of the pituitary body, which is stimulated by the injection of such extracts.

The probable sequence of events concerned in the production of diuresis is (a) ingestion of fluid by the mouth; (b) absorption of such fluid from the gastro-intestinal tract, and the absorption by such fluid of some substance contained in the gastro-intestinal mucous membrane; (c) stimulation of the pituitary body by this substance; (d) increased diuresis.

A. NINIAN BRUCE.

**INTEREST AS A FACTOR IN ANTAGONISM AND SIMULTANEOUS CONTRAST.** H. HARTRIDGE, *Journ. of Physiol.*, 1915, l., pp. 47-64.

THE term "interest" is used to express an act of subconscious judgment between images simultaneously presented to the eyes. Experiment shows that interest is a factor of importance in both monocular and binocular vision. In the case of monocular vision, there is evidence that interest is responsible for contrast coloration, and it is possible on that hypothesis to explain the ordinary phenomena of contrast. In addition it is possible to account for the diminution of contrast coloration on circumscribing the design with a black, and the increase observed in the coloration in certain circumstances, if the field be covered by a sheet of tracing paper. Further, one can explain the absence of contrast coloration in absence of light of the required colour. The theory is developed further by means of mathematical symbols, and the method of determining experimentally the value of the interest factor for monocular and binocular vision is described. It is found that for binocular vision, even the simplest design is able to displace a field without a design of many hundred times the intensity. In one case described the interest factor was 600, whereas with monocular vision a much lower factor was obtained, viz., 4.3. There is evidence that the colour and intensities of the different parts of the fields, and the power of attention of the individual, are factors of importance in determining the value of the interest factor. Thus fatigue causes a considerable change, the value obtained tending to approach unity. The probable site of the nervous processes, and the possible nature of those processes, are then discussed. Evidence is given for the

view that they do not occur, as has been previously thought, in the retina, but at that level in the nervous path of vision at which fusion of the impulses from the two retinae occurs.

A. NINIAN BRUCE.

**ON THE INHIBITORY ACTION OF THE PERIPHERAL NEURONES IN THE HEART OF THE FROG.** The late Lieut. T. A. LETTERS, *Quart. Journ. Exp. Physiol.*, 1915, ix., pp. 187-192 (12 figs.).

THE results show that in the frog a sudden rise of the intra-ventricular pressure above the normal, produced by clamping the aortae, causes a temporary decrease in the rate of the heart if the peripheral neurones of the heart are not interfered with; but that an acceleration is produced when these neurones are thrown out of action by the application of atropine. The observations seem to indicate that these neurones play a part in regulating cardiac action.

A. NINIAN BRUCE.

## PSYCHOLOGY.

**THE FEBBLY INHIBITED.—I. VIOLENT TEMPER AND ITS INHERITANCE.** CHARLES B. DAVENPORT, *Journ. Nerv. and Ment. Dis.*, 1915, xlii., Sept., p. 593 (11 figs.).

A STUDY has been made of 165 family histories of wayward girls in State institutions. This is accompanied by a number of tables and pedigrees, and the following conclusions are arrived at:—

1. The tendency to outbursts of temper—"tantrums" in adults—whether more or less periodic or irregular, and whether associated with epilepsy, hysteria, or mania, or not, is inherited as a positive (dominant) trait, typically does not skip a generation, and tends, ordinarily, to reappear, on the average, in half of the children of an affected parent.

2. It would seem to follow from the data here presented that epilepsy, hysteria, and mania are not the causes of the violent tempers frequently accompanying them; the violent outbursts are in no clear sense the "equivalent" of these various psychoses. Rather the violent outbursts of temper are due, in all these associations, to a factor that causes periodic disturbance (possibly paralysis of the inhibitory mechanism?). This factor has the greatest effect when acting on a nervous system that is especially liable to show the other psychoses. In other words, "tantrums" are apt to be associated with these various neurotic conditions while they have no necessary connection with them.

A. NINIAN BRUCE.

**ANGER.** THEO. B. HYSLOP, *Journ. Mental Sci.*, 1915, lxi., July, (519) p. 371.

BRIEF reference is made to some of the earliest writings on the subject of anger, and comparison is made with more recent views. Anger, as traced throughout the scale of evolution of the animal kingdom, has served as a stimulus to aggression for the procuring of food, as an aid to survival, and as a necessity for the acquirement and maintenance of supremacy. Anger occurring in mankind is (phylogenetically) an expression of an atavistic reversion or retrogression, and (ontogenetically) also an indication of familial or individual devolution. Clinically considered, it ranges in varying degrees of severity from mere temporary defective inhibition to conditions of suicidal and homicidal impulse of medico-legal and even national importance, as individuals, families, or communities become affected. Reference is made to some of the causes, symptoms, and methods of treatment of anger as coming within the experience of the medico-psychologist. A. NINIAN BRUCE.

## PATHOLOGY.

**THE NUCLEOLUS OF THE NERVE CELL IN NORMAL AND**  
(520) **PATHOLOGICAL CONDITIONS.** (Il nucleolo della cellula nervosa in condizione normali e patologiche.) A. ZIVERI, *Riv. di Patol. nerv. e ment.*, 1915, xx., p. 321.

THE nucleolus of the nerve cell is a complex body the constitution and function of which are not clear. The distinction between the true or acidophilous nucleolus, and the basophile chromatinic bodies described by Leri, and accepted by most authorities, must be regarded as established. The true nucleolus is, as a rule, almost in the centre of the nucleus. It is of a roundish form and contains inside it, especially in cells of large size, formations of vacuolated appearance which, according to the methods employed, appear transparent or refractile, or are deeply stained. These formations may be single or multiple, and of equal or unequal size. Their content is fluid, but their nature is not quite settled.

The nucleolus generally offers considerable resistance to the various pathological agents, and its disappearance only occurs in the severest forms of cellular lesions and only after the destruction of the nucleus. Changes in the nucleolus are represented by increase or diminution in size, excessive or defective colourability, swelling, displacement from the centre of the nucleus, and change in its roundish form. This change of form, however, occurs normally in the embryo of birds (chicken), and in the spinal ganglia of some animals (toad, rabbit). The lesions have

nothing specific and may occur in both acute and chronic forms. The best methods for examining the nucleolus are those which do not stain it in excess; the best are those of Unna-Pappenheim, Bielchowsky, Cajal, and Donaggio.

J. D. ROLLESTON.

**FATTY DEGENERATION OF THE CEREBRAL CORTEX IN THE**  
 (521) **PSYCHOSES, WITH SPECIAL REFERENCE TO DEMENTIA**  
**PRÆCOX.** HENRY A. COTTON, *Journ. Exp. Med.*, 1915, xxii,  
 Oct., p. 492 (8 coloured figs.).

1. In all degenerative alterations in the cerebral cortex the mass of the lipid materials in the ganglion cells, in comparison with that in healthy individuals of equal age, is found to be considerably augmented. Two types in general may be distinguished: (a) An augmentation of the lipid materials in the ganglion cells, in places where normally a small amount of fat is found. (b) An augmentation of the lipid materials over the entire cell.

2. The first type is also characteristic of senile dementia. The second type occurs in acute infectious psychoses, general paralysis, and well advanced epilepsy.

3. In young chronic cases of dementia præcox far-reaching fatty degeneration of the ganglion cells, especially in the second and third cortical strata, occurs comparable to the advanced lipid degeneration of the ganglion cells in senile dementia.

4. The so-called central neuritis represents a peculiar disease process according to the appearance of the fatty degeneration, since this fatty degeneration reaches a very advanced degree, and also in so far as it deviates from other disease processes in that here there comes out very distinctly in the picture an inclination of the fatty granules to flow together.

5. Amaurotic idiocy also represents a particular disease process in respect to the lipid degeneration, since here, in addition to otherwise distributed scarlet stain lipid materials, still other specific lipid materials make their appearance.

A. NINIAN BRUCE.

**THE DEMONSTRATION OF SPIROCHÆTA PALLIDA IN**  
 (522) **CHRONIC PARENCHYMATOUS ENCEPHALITIS (DE-**  
**MENTIA PARALYTICA).** JAMES M'INTOSH and PAUL FILDES,  
*Brain*, 1915, xxxvii., p. 401.

In six out of seven cases of "dementia paralytica" spirochætes were found by the dark-ground method, although when sections of these positive cases were cut, the organisms were only detected in there. It is thus obvious that the latter method presents much greater difficulties than the former, the spirochætes being

found only when they are numerous. Five cases also were examined in which the symptoms suggested a diagnosis of "dementia paralytica." This diagnosis was, however, found on section to be incorrect. No spirochaetes were found.

All the cases examined had exhibited relatively acute manifestations before death, and the brains, with one exception, were not markedly wasted. The spirochaetes were always confined to the grey matter, in one case only was a single specimen seen in the meninges. They were more or less superficial, and no constant relation could be observed between them and nerve cells or blood vessels. Indeed they appeared to be scattered quite fortuitously about the superficial layers of the cortex.

A. NINIAN BRUCE.

**ON THE PATHOLOGY AND TREATMENT OF CERTAIN DISEASES**  
(523) **OF INTERNAL SECRETION.** (Basedow's disease, tetany and acromegaly.) SCHOENBORN, *Archives of Ophthalmol.*, 1915, xlv., p. 421.

THIS paper consists of a general review of what is known with regard to the pathology and treatment of exophthalmic goitre, parathyroid disturbances such as tetany, and pituitary affections, such as acromegaly. Special reference is made to the accompanying eye symptoms, their probable causation and their treatment.

H. M. TRAQUAIR.

**HISTOLOGICAL AND FUNCTIONAL CHANGES IN THE CENTRAL**  
(524) **HYPOPHYSIS OF MAN IN A CASE OF LYMPHO-SARCOMA**  
**OF THE NASO-PHARYNX.** (Modificazioni istologiche e funzionali della ipofisi centrale dell' uomo in un caso di linfo-sarcoma del faringe nasale.) G. BASILE, *Riv. ital. di Neuropatol., Psichiatr. ed Elettrotetr.*, 1915, viii., p. 71.

THE patient was a man, aged 36, who died of cachexia due to an extensive small round-celled lympho-sarcoma of the mouth and naso-pharynx. During life he had shown the intellectual torpor and somnolence which Citelli had described in patients with adenoids and naso-pharyngeal tumours, and attributed to changes in the hypophysis. The anatomical findings were the same as in Citelli's cases. On naked eye examination, the central hypophysis was much enlarged and injected, and histologically there was an increase in number and size of the eosinophiles and of the lipoids. These changes, which should be regarded as a manifestation of over-activity on the part of the hypophysis, illustrate the relations existing between the hypophysis and the naso-pharynx.

J. D. ROLLESTON.

## CLINICAL NEUROLOGY.

**SOME CASES OF A "CROSSED REFLEX" ASSOCIATED WITH**  
(525) **PAIN: THE BEARING OF THE CROSSED REFLEX UPON**  
**THE THEORY OF THE EXISTENCE OF AUTOMATIC**  
**SPINAL CENTRES.** E. D. MACNAMARA and E. B. GUNSON  
*Brain*, 1915, xxxvii., p. 408.

FIVE cases are described in which the following reflex was noticed: "on grasping firmly the quadriceps extensor muscle with the thumb and fingers immediate flexion at the opposite hip-joint took place." Elicitation of the reflex apparently caused considerable pain, and was much resented by the patient. In one case dorsiflexion of the great toe on the same side also occurred, in a second case the dorsiflexion was on the opposite side, and in a third case it was sometimes on the one side and sometimes on the other. The fourth and fifth cases showed no associated movements, while in the fifth the above reflex was not accompanied with pain. In two cases an extensor response could be elicited by the ordinary methods (*Cf.* p. 317).

The nature of this reflex is discussed. It cannot be assumed that a movement of the limb opposite to the one stimulated, associated with no movement of the stimulated, is a movement of mere withdrawal or of defence, and it is hard to offer any explanation other than that such a movement is one of a series of movements involved in progression, and may, therefore, be taken for what it is worth, as supporting the hypothesis of the existence of automatic spinal centres.

A. NINIAN BRUCE.

**BABINSKI'S SIGN AND AUTOMATIC SPINAL REFLEXES.** (Le  
(526) **signe de Babinski et les réflexes d'automatisme médullaire.**)  
C. PASTINE, *Rev. Neurol.*, 1913, xxi., p. 403.

THE author considers that the plantar extensor reflex, or Babinski's sign, is not a part of the general automatic spinal reflex of defence, because there may be a dissociation of the one from the other.

A. NINIAN BRUCE.

**TYPHOID SPINE.** J. B. CARNETT, *Annals of Surgery*, 1915, lxi.,  
(527) p. 456.

OVER a hundred cases are on record. Fully 85 per cent. are in males. The ages range from 8 to 56 years, but the majority are between 20 and 35 years. Typhoid spine follows mild cases of typhoid fever as frequently as it does severe. X-rays shows absorption of the intervertebral disc and slight

destructive changes in the bodies of the vertebrae in the earlier stages, and later bone proliferation from the periosteum and bone deposition among the lateral ligaments producing firm bony ankylosis of adjacent vertebral bodies. In addition to constitutional and local symptoms and referred pain, a few cases have shown a curious rhythmical alternating contraction and relaxation of the abdominal muscles on one or both sides. The contractions are usually synchronous with the pulse beat. Carnett records four cases illustrated by skiagrams in males aged from 15 to 37 years. J. D. ROLLESTON.

**A CASE OF PARALYSIS OF THE DIAPHRAGM PROBABLY POST-DIPHTHERITIC.** WALKER DOWNIE, *Practitioner*, 1915, lcv., p. 55.

A FATAL case of paralysis of the diaphragm associated with paralysis of the soft palate and constrictor muscles in a woman who had had a sore throat four or five weeks previously. The necropsy showed acute inflammation of the trachea and bronchi and signs of insufflation pneumonia. J. D. ROLLESTON.

**SPINAL SCIATICA.** (Sciaticque spinale.) J. M. RAIMISTE, *Rev. Neurol.*, (529) 1913, xxi., Sept. 15, p. 253.

THE author records four cases who suffered from pain in the back of the thigh, tenderness on pressure over the sciatic nerve and its branches, with increased tendon reflexes and slight sensory changes. Lumbar puncture gave issue to a fluid under increased tension with a positive Nonne-Apelt reaction. Recovery took place in all four cases in from one to five days. A diagnosis of meningo-myelitis is suggested for such cases, and it is pointed out that similar types of pain in the anterior part of the thigh and other regions may be cured similarly. A. NINIAN BRUCE.

**A CASE OF CEREBRO-SPINAL MENINGITIS WITH MULTIPLE ARTHRITIS IN AN INFANT OF 2 MONTHS. RÔLE OF CARRIERS IN THE PROPAGATION OF THE DISEASE. MENINGOCOCCAL ARTHRITIS AND ESPECIALLY SUPPURATIVE MENINGOCOCCAL POLYARTHRITIS IN INFANTS.** (Un cas de méningite cérébro-spinale avec arthrites multiples chez un nourrisson de deux mois. Rôle des porteurs de germes dans la propagation de la maladie. Des arthropathies à méningococques et notamment des polyarthrites méningococciques suppurées des nourrissons.) A. NETTER, *Bull. et mém. Soc. méd. Hôp. de Paris*, 1915, xxxix., p. 588.

NETTER lays stress on the frequent intervention of healthy carriers in the transmission of the disease, the rarity with which more



than one member of a family is attacked in cerebro-spinal meningitis, and the favourable prognosis of meningococcal arthritis except in infants, in whom it tends to be multiple and to be associated with other manifestations of a generalised infection.

J. D. ROLLESTON.

**PACHYMENINGITIS INTERNA HÆMORRHAGICA AS A CAUSE**  
(531) **OF DEATH.** H. D. MACPHAIL, *Journ. Ment. Sci.*, 1915, lxi., July, p. 443.

A YOUNG, robust, adult male, aged 25, was admitted to hospital suffering from a first attack of acute melancholia. There was no history of alcoholism, and no evidence of any gross brain lesion. Without any warning he was one day seized with a sudden cerebral attack, became rapidly comatose, without any symptoms pointing to cortical irritation, and died within six hours. At the post mortem no lesion except hæmorrhagic pachymeningitis could be found.

Pachymeningitis interna hæmorrhagica is usually accompanied by gross cerebral lesions, which of themselves are sufficient to cause death. Here, however, it was the only lesion present, and was the sole cause of death.

A. NINIAN BRUCE.

**SYPHILIS MENINGO-VASCULARIS, CONGENITAL SYPHILIS,**  
(532) **CHOROIDITIS, OPTIC ATROPHY, HERPES ZOSTER, MUL-**  
**TIPLE ROOT LESIONS.** L. GUTHRIE and E. G. FEARNSIDES,  
*Brit. Journ. Child. Dis.*, 1915, xii., p. 206.

Boy, aged 12 years. Wassermann's reaction was positive in the blood and cerebro-spinal fluid, and the cells in the cerebro-spinal fluid numbered 25 per c.mm. The patient was blind, both optic discs were in a condition of white atrophy. He complained of shooting pains in the body, back, and extremities, and there were definite root areas of hyperalgesia. Herpes zoster was present in the right fourth lumbar area. After three injections of 0.6 gm. neosalvarsan the pains ceased, but his sight and the physical signs of nervous disease were little affected.

J. D. ROLLESTON.

**TRAUMATIC SUBDURAL HÆMORRHAGE.** L. BATHE RAWLING,  
(533) *Practitioner*, 1915, xcv., Aug., p. 160.

A DESCRIPTION of three cases of injury to the head from fall. No immediate signs of injury to the brain were found except irritability and headache, from which they did not recover, and in one case it was not until three weeks later before a hemiplegia slowly

developed. This is due to a subdural hemorrhage, the blood being derived from torn cortical veins, and thus the clot is venous, of low pressure, and of slight compressive power. Such cases show a very marked alteration of temperature on the two sides of the body, the temperature on the injured side of the brain being higher than on the opposite side. They are to be carefully distinguished from extra-dural bleeding from the middle meningeal artery. Removal of the clot is necessary.

A. NINIAN BRUCE.

**A CASE OF CEREBRAL TUMOUR, SIMULATING ECLAMPSIA.**

(534) (**Ein Fall von Gehirntumor, Eklampsie vortäuschend.**) EDVARD ALIN, *Nord. Med. Arkiv*, 1914, xlvii. (Kirurgi, Afd. 1, häft 3), pp. 1-4.

A WOMAN, aged 39, iv-para, suffered from attacks of unconsciousness and fits for about eight years. They varied much in frequency. There was a small quantity of albumin present in the urine. During her last pregnancy the attacks were accompanied by coma with tonic contractions of the left hand, arm, leg, and left side of face, spreading later to the other half of the body, and of an epileptic nature. Casserian section was performed, and a living fetus removed.

At the autopsy a large glioma was discovered infiltrating the greater part of the right frontal lobe.

A. NINIAN BRUCE.

**PSYCHICAL PHENOMENA OBSERVED IN A CASE OF TUMOUR**

(535) **OF THE POSTERIOR CRANIAL FOSSA.** (*Su alcuni fenomeni psichici osservati in un caso di neoplasma della fossa cranica posteriore.*) VINCENZO SCARPINI, *Rassegna di Studi Psichiat.*, 1915, v., Luglio-Agosto, p. 187.

A CASE is described of a patient, aged 34, who presented, amongst other symptoms of cerebral tumour, the facetiousness ("Witzelsucht" of Oppenheim) which is considered by many authors to be characteristic of a tumour of the frontal lobe. At the autopsy, however, a tumour of the posterior cranial fossa was found.

A. NINIAN BRUCE.

**A CASE OF MOTOR DYSPRAXIA AND PARAPHASIA : AUTOPSY**

(536) **TUMOUR IN SUPRAMARGINAL CONVOLUTION.** E. G. FEARNSIDES, *Brain*, 1915, xxxvii., p. 418 (1 fig.).

In most reported cases of motor dyspraxia it has been one only of a series of manifestations, and at autopsy multiple lesions have usually been found. In the patient who forms the subject of this

note the clinical interferences were limited to motor dyspraxia, dysgraphia, paraphasia and amnesic aphasia, and at autopsy a small, well localised, secondary carcinomatous nodule was found in the left supramarginal convolution surrounded by recent cerebral softening. Although a detailed microscopic investigation of the fibres destroyed by the tumour was impossible, the case is of considerable importance for the localisation of these symptoms. It is carefully described at some length. A. NINIAN BRUCE.

**APHASIA FROM TUMOUR OF THE RIGHT HEMISPHERE IN (537) THE RIGHT-HANDED.** (*Aphemia da tumore dell' emisfero destro in destrimane.*) U. RUGGI, *Riv. ital. di Neuropat., Psichiat. ed Elettroter.*, 1915, viii., p. 172.

A RECORD of a case with autopsy findings in a musician (age not stated) in whom the aphasia was due to a fibro-sarcoma involving the right frontal lobe. Naked eye and microscopic examination of the left frontal lobe was negative. The case proves that in the right-handed Broca's area may be situated in the right hemisphere, and that predominant use of the right limb does not necessarily entail the development of speech centres in the opposite hemisphere. This circumstance makes one doubt the value of Liepmann's suggestion for the prophylaxis of aphasia, viz., to cultivate motor ambidexterity so as to obtain a cerebral ambidexterity.

J. D. ROLLESTON.

**INTRANASAL OPERATION IN TUMOUR OF THE HYPOPHYSIS.** (538) **Report of a case in a child 9 years of age.** T. H. HALSTED, *N.Y. Med. Journ.*, 1914, c., Oct. 31, p. 871.

A GIRL, aged 9 years, above her age in mentality, was admitted to hospital suffering from frontal headache, defective vision, although the fields were normal, unsteady gait, marked adiposity, ataxia with intention tremor, and difficulty in making co-ordinated movements. The sella turcica was somewhat enlarged, and double optic neuritis was present. A diagnosis of cyst of the pituitary body was made, with pressure on the optic thalamus and corpora quadrigemina.

Operation was performed by Hirsch's intranasal method in three stages under local anaesthesia. A cyst was discovered and drained. It was noticed that a few minutes after incising the cyst, the pupils, previously widely dilated, became contracted. She became apathetic, dull and stuporous, and developed polyuria, but later gradual improvement followed, although signs of hypopituitarism now set in shown by loss of weight, loss of muscular

strength and tone, and change in disposition. Pituitary extract given by mouth was followed by great improvement, the patient becoming cheerful and talkative, and the muscular strength returned.

A. NINIAN BRUCE.

**ON THE CEREBELLAR SYNDROME OF BABINSKI, WITH**  
(539) **REPORT OF A CASE.** HENRY K. MARKS, *Journ. Nerv. and*  
*Ment. Dis.*, 1914, xli., Nov., p. 709.

BABINSKI'S cerebellar syndrome consists of dysmetria, asynergia, cerebellar catalepsy, and adiadochokinesis, and is to be contrasted with the classical syndrome of Duchenne, which consisted of titubation, tremor, nystagmus, and other well-known signs.

Disturbance of the diadochokinesis is a disturbance in the ability to carry out voluntarily in rapid succession a series of antagonistic movements. It must be judged with caution. A movement is dysmetric when it is executed without measure in time or space. Asynergia is shown by the inability to simultaneously combine a group of muscular displacements, which, under ordinary circumstances, should go to make up a normally executed movement. Cerebellar catalepsy is the term applied to the curious fixity or immobility seen in typical cases following oscillatory movements if the patient lies on his back with his legs flexed.

A case is described in a boy who had just passed through an attack of scarlet fever with marked delirium and showed profound disturbances of co-ordination, dysmetria, asynergia, adiadochokinesis, and generalised choreiform movements. The association of the last with Babinski's syndrome is interesting, especially as Touche has shown that generalised choreiform movements can be produced by a cerebellar lesion.

A. NINIAN BRUCE.

**THE DIAGNOSIS OF TUMOURS IN THE POSTERIOR CRANIAL**  
(540) **FOSSA.** T. H. WEISENBURG and PHILIP WORK, *Journ. Amer.*  
*Med. Assoc.*, 1915, lxx., Oct. 16, p. 1345.

THE authors believe that the chief function of the cerebellum is to synergise all movements of the body. Such symptoms as hypermetria, adiadochokinesis, or tremor result from loss of synergy. This asynergy may be detected in any part, or parts, of the body.

*Tumours Confined to the Cerebellum.*—The superior vermis contains the centres for synergic movements of the upper trunk or shoulder girdle, the inferior vermis the lower trunk or pelvic girdle. Lesions here cause disturbances in the movements of one or both limbs, alterations in station and gait. If the lateral lobes

alone are affected the synergic movements are present only in the limbs of the involved side. The synergic centre for eye movements lies in the extreme upper portion of the superior vermis. Involuntary nystagmus is usually cerebellar, while voluntary nystagmus is the result of implication of these fibres which are in relation to the vestibular apparatus outside of the cerebellum.

*Tumours of Superior Cerebellar Peduncle.*—These mostly grow from the third ventricle, and show preponderant cerebellar symptoms. The gradual onset of paralysis of associated ocular movement upward leaves the diagnosis in no doubt (*cf. Review*, 1911, ix., p. 85).

*Tumours of Middle Cerebellar Peduncle.*—These are rare. They extend from the pons into the cerebellum, or *vice versa*. They show fifth and sixth nerve symptoms on the side of the lesion, with sensory and motor phenomena on the opposite side.

*Tumours of Inferior Cerebellar Peduncles.*—Very rare and never limited to them. They show implication of the vestibular tract, and involvement of the ninth, tenth, and twelfth cranial nerves.

*Tumours of Cerebello-pontine Angle.*—The cerebellar symptoms here are usually not very marked, and unless the tumour is very great the asynergy will be limited only to the arm and leg on the side of the growth. Most such tumours grow from the eighth, or more rarely the seventh, fifth, or sixth cranial nerves. The cerebellar symptoms will be more marked and early if the tumour invade the angle secondarily from the cerebellum or pons (*cf. Review*, 1914, xii., p. 524).

A. NINIAN BRUCE.

#### STUDIES ON THE LOCALISATION OF CEREBELLAR TUMOURS.

(541) —I. The significance of staggering gait, limb ataxia, the Romberg test, and adiadochokinesis. ERNEST G. GREY, *Journ. Nerv. and Ment. Dis.*, 1915, xlii., Oct., p. 670.

THE object of this paper has been to determine more accurately the significance of staggering gait, limb ataxia, the Romberg test, and adiadochokinesis in localising new growths in the posterior fossa. It is based upon an analysis of the records of forty-six cases of cerebellar tumour. In each instance the lesion has been localised either at operation or at autopsy. The following conclusions have resulted from the study:—

1. While the staggering or drunken gait is probably the most characteristic symptom of cerebellar disease, a deviation in one or another direction has no appreciable localising significance.

2. While the Romberg test is useful in establishing a diagnosis of subtentorial tumour, a swaying towards one or other side has no importance in localising new growth.

3. In the majority of patients with unilateral disease there is more ataxia in the limbs homolateral to the tumour. When present in different amounts on the **two sides**, ataxia has an appreciable worth as a localising sign.

4. When adiadochokinesis is present in one limb, or in opposite limbs to an unequal degree, it assumes some importance as a localising sign.

A. NINIAN BRUCE.

### **STUDIES ON THE LOCALISATION OF CEREBELLAR TUMOURS.**

(542) — III. **Posterior new growths without nystagmus.** ERNEST G. GREY, *Journ. Amer. Med. Assoc.*, 1915, lxx., Oct. 16, p. 1341.

Of 34 verified cases of cerebellar tumour, and 17 verified cases of extracerebellar tumour, 11 showed no nystagmus previous to operation on repeated examination. All of the cases in which it was absent contained intracerebellar new growths—32 per cent. of the intracerebellar series. This suggests that when a patient exhibits a cerebellar tumour syndrome without nystagmus, the absence of rhythmic movements of the eyes points toward an intracerebellar localisation of the lesion.

Among the members of both groups (*i.e.*, the group with and the one without nystagmus) there were marked differences in the degree of intracranial tension. In each group there were new growths which involved the vermis, and others which replaced a part or the whole of one or both hemispheres.

Caloric examinations made in 6 of the cases in which there were no rhythmic movements of the eyes resulted in characteristic nystagmus from either labyrinth in 5.

Of 43 verified cases of tumours lying anterior to the cerebellum, 8 showed nystagmus previous to operation. Caloric examinations made in 7 of the cases without nystagmus provoked characteristic rhythmic oscillations of the eyes from either labyrinth in 6.

These results indicate that in many cases of intracranial tumour the absence of nystagmus cannot be accounted for by an impairment of the fundamental mechanism of nystagmus.

A. NINIAN BRUCE.

### **ON CEREBELLAR HÆMORRHAGES. (Sulle emorragie cerebellari.)**

(543) G. AYALA, *Riv. di Patol. nerv. e ment.*, 1915, xx., p. 12.

AN alcoholic and syphilitic man, aged 65, who had suffered some years from heart disease, was admitted to hospital with failing compensation. A week later, when the cardiac action had become regular, he suddenly developed during the night psycho-motor

excitement and intense headache, followed by an ictus, with all the characteristics of ordinary cerebral apoplexy (loss of consciousness, relaxation of limbs, almost complete loss of general sensibility, abolition of all reflexes, &c.). No sign of motor deficiency in the limbs or in the facial muscles was noted, but only a general hyposthenia. The following days there appeared one after another the various signs of a slight right hemiplegia. The general hypotonus and asthenia, with abolition of all the reflexes, became more marked, and Babinski's and Oppenheim's signs appeared on both sides. Death took place nine days after the ictus.

Post mortem, a hæmorrhagic focus was found in the cortical and subcortical substance of the right *lobus quadratus* of the cerebellum.

From a consideration of this case and others on record the writer comes to the following conclusions regarding cerebellar hæmorrhages:—

1. The mild and stationary forms may or may not give rise to symptoms, or be manifested by a syndrome which has nothing characteristic (headache, vertigo, amblyopia, hemiparesis, change of character, titubation, &c.), which only exceptionally suggests the existence of a defect or perturbation of the cerebellar function. It is only the presence of occipital pain, or a reeling gait, that justifies the suspicion of a cerebellar lesion.

2. In grave forms, with more or less slow course, with or without an ictus, the most important data are the following:—The absence, at first, of paralysis or paresis of the limbs or cranial nerves, and of disturbances of sensation and vision; the appearance after a time of slight paresis, which gradually gets worse, with or without a unilateral or bilateral Babinski's sign; the presence of asthenia or general or unilateral hypotonus, with diminution or abolition of all the superficial and deep reflexes.

3. In the most severe and rapidly fatal form of cerebellar hæmorrhage, diagnosis from cerebral apoplexy is impossible.

J. D. ROLLESTON.

**A SERIES OF CASES OF TRANSIENT APHASIA, HEMIPLEGIA,  
(544) AND HEMIPARESIS DUE TO ARTERIAL SPASM. J.**

GORDON SHARP, *Lancet*, 1915, Oct. 16, p. 863.

A TEMPORARY spasm of the cerebral vessels is a frequent cause of paralysis. It is liable to occur in subjects suffering from arteriosclerosis, but is also seen in young patients with healthy arteries and without increased blood pressure. Emotions and toxins are considered to be the exciting cause in those cases.

The author believes that all the cerebral arteries suffer, and that the middle cerebral artery is not specially picked out. The extensor plantar reflex is stated to be present in many cases of transient hemiplegia.

R. DODS BROWN.

**A CASE OF TEMPORARY MOTOR APHASIA DEVELOPING IN  
(545) THE COURSE OF TUBERCULOSIS.** JOHN B. M'DOUGALL,  
*Lancet*, 1915, Sept. 18, p. 647.

A GIRL, aged 10, who had been in apparently good health, developed lung trouble following exposure to damp and cold. She became extremely emaciated, with a certain amount of mental torpor, but no other nervous symptoms of any kind. One day, however, she lost her speech, although she could say a few words such as "nurse," "doctor," &c., with difficulty. She seemed quite conscious of her condition, and understood what was said to her, although she could neither read nor write. Two days later she became perfectly alert mentally, and able to speak as fluently as before.

The author is inclined to think the lesion might be the result of the growth of small periarterial tubercles in the Sylvian fissure, and not of meningitic origin.

A. NINIAN BRUCE.

**OBSERVATIONS ON A CASE OF FAMILY PERIODIC PAR-  
(546) ALYSIS.** D. L. EDSALL and J. H. MEANS, *Amer. Journ. Med. Sci.*, 1915, cl., Aug., p. 169.

A MAN, aged 35, suffered from complete flaccid paralysis of all the skeletal muscles except the face, eye muscles, and those of deglutition, occurring at irregular intervals, and lasting from six to forty-eight hours. The longest interval was seldom over six days. Normal respiration was not involved but the accessory muscles were. The disease had been in the family for five generations.

It was found by two entirely different methods that a fall in the  $\text{CO}_2$  tension took place during the attacks. Such a fall may be due either to the development of an acidosis or to an increased sensitivity of the respiratory centre. The latter was considered to be the most probable, and the most likely cause to be an intoxication of some kind. Enough positive findings were obtained to make it seem probable that this disease is one of metabolism and not of nervous origin. A low protein diet is worthy of trial.

A. NINIAN BRUCE.



**PERMANENT PARTIAL COMPRESSION OF BOTH COMMON (547) CAROTIDS IN EPILEPSY : A REPORT OF EIGHT OPERATIONS.** J. E. EASTMAN, *Amer. Journ. Med. Sci.*, 1915, cl., Sept., p. 365.

ON the hypothesis that in epileptics the seat of the disease is the entire brain and may be looked upon as an abnormal state of irritability, Momburg narrowed the common carotids in two cases with silver wire loops so that this irritability might be decreased by decreasing the blood supply, and by decreasing the nutrition the irritability of the cells might be lowered without affecting their vitality.

A silver wire 1 mm. in thickness was passed under each common carotid and the ends twisted until the temporal pulse on each side became so slight as to be just perceptible. A catgut strand was tied to the twisted ends of the wire and left hanging out of the wound to be used as a guide in case threatening cerebral symptoms required immediate removal of the wire. Of six cases, three showed some improvement, the severity of the attacks being reduced. One developed right hemiplegia with aphasia.

A. NINIAN BRUCE.

**PAROXYSMAL DYSPNŒA IN HYSTERIA.** (*Dyspnée paroxystique (548) chez un hystérique.*) L. PLAZY, *Gaz. hebdomadaire des Sciences médicales de Bordeaux*, 1915, xxxvi., p. 69.

A NAVAL electrician, aged 23, half-an-hour after a bath complained of severe pain in the tenth left intercostal space. The respirations were superficial, very rapid, 103, but regular. The temperature was normal, and the signs in the chest negative. The dyspnœa subsided in the next twenty-four hours, but during the next week similar attacks occurred almost daily, in which the respirations ranged between 132 and 160. A slight degree of diaphragmatic pleurisy was detected, but the symptoms were quite out of proportion to the physical signs. The possibility of dormant hysteria being awakened by the pleural irritation having suggested itself, pressure was made upon the epigastrium, with the result that the attack stopped almost immediately. The sensation was then examined and slight hyperæsthesia of the left side was found as well as diminution of the pharyngeal reflex. The visual field was not examined.

J. D. ROLLESTON.

**HYSTERICAL TACHYPNŒA.** (*Contributo clinico allo studio della (549) tachypnœa isterica.*) C. F. ZANELLI, *Riv. di Patol. nerv. e ment.*, 1915, xx., p. 78.

THE patient was a girl, the member of a neuropathic family. She had had transitory convulsive attacks at the age of 1 year, broncho-

pneumonia at 5 years, and had been subject to tonsillitis almost every year. She had long been anæmic. At the age of 14, without any plausible reason, her respirations became abnormally frequent. She remained a week in bed, and during this time right hemiparesis and hemianæsthesia appeared. Constipation was so marked that the bowels were not open for eighteen days. Bromides, hydrotherapy, and electrical treatment had no effect on her respiratory disturbance, which lasted uninterruptedly for six months, ceasing only in sleep. Examination showed the absence of any organic lesion of the respiratory, cardiac, or abdominal organs. The respirations varied from 150 to 180 a minute, were noisy and continuous, and carried out with the mouth open, aided by synchronous movements of inspiratory extension and expiratory depression of her head, and a raising or lowering of the shoulders, with slight contractions of the sternomastoid. With every ten or twenty respirations there was a deeper and longer respiration.

Under treatment by tonics, rest in bed, suggestion (comprising persuasion and hypnosis), isolation, education of the respiratory movements, electrical currents, sedatives in small and fractional doses, and hydrotherapy, considerable improvement was obtained. In less than two weeks the hemiparesis and hemianæsthesia disappeared, and after about fifty days' treatment the tachypnoea considerably diminished. J. D. ROLLESTON.

**CONTRIBUTION TO THE STUDY OF FACIAL BISPASM AND**  
 (550) **FACIAL HEMISPASM ALTERNANS COMBINED WITH**  
**ARTERIO-SCLEROTIC EPILEPSY AND A PSEUDO-PARKINSON**  
**MESENCEPHALIC SYNDROME.** (Contribution à l'étude du bispasme facial et de l'hémispasme facial alterne combiné à l'épilepsie artério-sclérotique et à un syndrome mésencéphalique pseudo-Parkinsonien.) W. STERLING, *Rev. Neurol.*, 1913, xxi., Sept. 15, p. 241.

*Case I.*—Man, aged 62, suffered from a bilateral facial spasm. The entire face was affected on the right side, only the muscles above the eyes on the left. There had never been any trace of facial paralysis. The spasms persisted during sleep.

*Case II.*—Man, aged 68, developed a left facial spasm following a right hemiplegia. About six months later a series of generalised epileptic seizures occurred, and the spasm on the left side of the face completely disappeared. The gait, rhythmic tremor of the trunk, thighs, and head, and general appearance of this patient resembled paralysis agitans. A. NINIAN BRUCE.

**A CONTRIBUTION TO THE PARALYTIC AND OTHER  
(551) PERSISTENT SEQUELÆ OF MIGRAINE. J. RAMSAY HUNT,  
*Amer. Journ. Med. Sci.*, 1915, cl., Sept., p. 313.**

THE author records his personal experience with a number of cases of migraine, which resulted in serious and permanent sequelæ.

1. "Migraine in a woman, aged 25, following typical unilateral headache; developed complete paralysis of the left third nerve; recovery. One year later another migrainous seizure, followed by incomplete palsy of the right third nerve; recovery."

2. "Typical migraine since childhood; at the age of 43 had an attack of complete third nerve paralysis, with recovery; a subsequent attack which proved fatal; cardiovascular complications."

3 and 4. Occurrence in two sisters with migraine of isolated abducens palsy developing during the attack; recovery.

5. "Man, aged 44, had suffered from migraine since childhood; after a typical attack there developed a right homonymous hemianopsia, which persisted."

6. "Severe migraine since childhood; at the age of 45, during an attack, developed a left homonymous hemianopsia lasting ten days, followed by recovery; eight months later a second attack was persistent; mitral disease."

7. "Woman, aged 32, became semi-unconscious, with stupor and left hemiplegia and left hemianopsia following migraine; recovery."

8. "Woman, aged 31, subject to migrainous seizures since childhood; after a severe attack she developed a unilateral retrobulbar neuritis with paracentral scotoma; recovery."

A. NINIAN BRUCE.

**SOME UNUSUAL CHANGES IN THE VISUAL FIELDS. The  
(552) result of vascular lesions in the brain and optic nerves.  
W. CAMPBELL POSEY, *Archives of Ophthalmol.*, 1915, xliv., Sept.,  
p. 507.**

THE author describes a case of permanent quadrant and hemiopic losses following so-called "migrainous attacks," and points out that there is ample evidence in the literature that migraine may be the exciting cause of organic brain disease, and that an area of softening of the brain may follow, which may manifest itself by a permanent paralysis, aphasia, or paraphasia. While such lesions usually occur in individuals who are predisposed in consequence of disease of the walls of the blood vessels, it would seem that, in certain cases, the vascular lesion may occur in young persons, and even in some adults with healthy vessels. Caution must, however, be observed in ascribing an exciting rôle to

migraine in cases of organic brain disease, as it may merely be coincident.

The following cases are also described:—

1. Left eye blind from thrombosis of central artery of the retina. Temporal field of right eye lost from cerebral apoplexy, right nasal field alone remaining.

2. Unilateral optic atrophy and contralateral hemiplegia consequent on occlusion of the cerebral vessels.

3. Monolateral nasal hemianopsia of the left eye from pressure atrophy in consequence of atheroma of the ophthalmic artery (?).

4. Right homonymous hemianopsia confined to the macular regions from blocking of an end artery in or near the cortical centre of the visual area.

A. NINIAN BRUCE.

**ORDINARY AND ATYPICAL MIGRAINE IN THEIR RELATION  
(553) TO OCULAR DEFECTS.** F. C. WALLIS, *Practitioner*, 1915, xcv,  
Aug., p. 213.

Boy suffered from severe periodic vomiting after meals, unassociated with headache and rarely with nausea; drowsiness, emaciation, and prostration marked. Cyclical vomiting is closely resembled. Complete relief by glasses, correcting slight compound hypermetropic astigmatism.

Man, aged 52, typical textbook symptoms of migraine; very slight mixed astigmatism and presbyopia. Complete relief by glasses.

Girl, aged 15, hemicrania and sickness, but no optical sensations. Hypermetropic astigmatism. Correcting lenses lessened greatly the severity and the frequency of the headache, and entirely relieved the sickness and nausea.

Woman, aged 19, attack of migraine replaced by nausea and momentary giddiness and slight sickness. Entire absence of headache or other phenomena. Father and grandmother affected by classical migraine. Myopic astigmatism and hyperphoria; complete relief by correcting these.

A. NINIAN BRUCE.

**THE SCOTOMA OF MIGRAINE.** F. W. EDRIDGE-GREEN, *Lancet*, 1915,  
(554) April 24, p. 847.

THE condition present in migraine is a central scotoma increasing from within outwards. The foveal region of the retina, which contains only cones, is sensitised from the peripheral portion containing rods, by the spread of the photo-chemical fluid over the

ends of the cones. Any disturbance of the circulation in the eye preventing the flow of photo-chemical fluid to the fovea would thus produce a central scotoma increasing from within outwards.

A. NINIAN BRUCE.

**RAYNAUD'S SYNDROME: RAYNAUD'S DISEASE.** OLIVER T. (555) OSBORNE, *Amer. Journ. Med. Sci.*, 1915, cl., Aug., p. 157.

THIS disease was first described by Sir Benjamin Brodie in 1837, and was first recognised as a clinical entity by Maurice Raynaud in 1862. It was, however, not known as Raynaud's disease until 1874.

Raynaud's disease is not a distinct entity; it is a syndrome caused by the disturbance of one or more internal secreting glands. There is primarily no real disease of the blood vessels, but the vasomotor control is so abnormally disturbed that most profound contraction of certain blood vessels may occur in different parts of the body, perhaps more or less coincident with abnormal dilatation of other blood vessels. If the contracted blood vessels are peripheral the parts more or less lose their function and show various trophic disturbances. This blood vessel spasm may occur in the internal organs of the body as well as peripherally, though much less frequently and more difficult of diagnosis. The syndrome is probably due to disturbances of more than one of the ductless glands, but there is always apparently some disturbance of the thyroid. Thyroid treatment improves most cases and cures some. Nitroglycerin is always of temporary benefit and local heat of immediate benefit.

A. NINIAN BRUCE.

**PELLAGRA CONSIDERED FROM THE POINT OF VIEW OF A** (556) **DISEASE OF INSUFFICIENT NUTRITION.** F. M. SANDWICH, *Lancet*, 1915, Oct. 23, p. 905.

AFTER discussing briefly and discarding some of the theories as to the etiology of pellagra, reference is made to some points of resemblance between it and beri-beri. It is contended that the latter disease is due to a deficiency of "vitamines," and may occur with any diet in which this is present. "The association between beri-beri and rice is almost accidental." The suggestion is made that pellagra is due to a similar deficiency, not necessarily in maize. In Scotland it may be due to oatmeal.

The author holds that every early case is apparently cured by rest and improved diet. This, however, is not in agreement with some authorities. The writer's contention as to the causation is

supported by some American investigators whose work is referred to. The association of the disease and ankylostomiasis is mentioned, and is considered noteworthy, because symptoms due to deficiency of nutrition are prone to appear earlier in an anemic person than in a healthy individual. The latter part of the paper deals with experiments on the feeding of guinea pigs on maize and green food.

R. DODS BROWN.

**STUDIES OF NITROGEN PARTITION IN THE BLOOD AND  
(557) SPINAL FLUID WITH ESPECIAL REFERENCE TO THE  
POSSIBLE CAUSATION OF ALBUMINURIC RETINITIS.**

ALAN C. WOODS, *Archives of Int. Med.*, 1915, xvi., Oct., p. 577.

THERE is no apparent relationship between the retention of any nitrogenous body and the occurrence of albuminuric retinitis, and there is certainly no evidence that they stand in the relationship of cause and effect. There does seem to be more than a casual relationship between the "residual nitrogen" of the blood and the severity of the case as observed clinically. As the level of non-protein nitrogen rises, the component nitrogenous bodies increase, and in the case of the chief constituents, this rise is proportioned. Estimations of total non-protein nitrogen and of urea in the spinal fluid give no greater diagnostic or prognostic significance than estimations of these substances in the blood. The variations in chloride concentration in the blood are so small that in themselves they give no idea of salt retention:

A. NINIAN BRUCE.

**PSYCHIATRY.**

**TWO CASES OF GENERAL PARALYSIS WITH ATYPICAL  
(558) SYMPTOMS.** (Due casi di paralisi progressiva a sintomatologia atypica.) A. FRIGERIO, *Riv. di Patol. nerv. e ment.*, 1915, xx., p. 355.

THE first case was that of a man, aged 48, who had acquired syphilis eight years previously. His final illness lasted about a year, during the first eight months of which his symptoms were those of tabes pure and simple, without any trace of mental disturbance. Then ensued short periods characterised by ideas of persecution, accompanied by irritation, threats, and acts of violence which necessitated his being sent to an asylum; states of anxiety were then noted, associated with terrifying auditory hallucinations, but without marked disturbance of the intellectual faculties or

disorders of conduct. Finally there was a period of two months in which the patient became confused, disordered, sometimes suicidal, and a prey to almost continuous agitation and mental unrest. Wassermann's reaction in the blood serum was positive.

Post mortem, the naked eye examination confirmed the diagnosis of tabes, and excluded syphilitic meningitis. The lesions of general paralysis were only discovered on histological examination.

The second case was that of a woman in whose family had been many cases of mental diseases (not specified). At 34 she developed intense headache, with loss of hair. The following year mental disturbances began, characterised by hallucinations, chiefly auditory, more rarely visual and olfactory, depression, and suicidal attempts, but without diminution of the intellectual faculties. Two years after the commencement of the disease she suddenly developed right hemiplegia, which lasted till death, which occurred six months later. The hemiplegia was followed by a slow but progressive physical and mental decay. Wassermann's reaction in the blood serum was positive.

The autopsy showed the lesions of general paralysis, but of an unusually slight degree. No gross lesions were found to account for the hemiplegia, but a complete histological examination of the left motor region was not made.

J. D. ROLLESTON.

**AORTITIS IN GENERAL PARALYSIS.** (*Le aortiti nelle paralisi (559) generale.*) G. EPIFANIO, *Riv. di patol. nerv. e ment.*, 1915, xx., p. 156.

FROM examination of fifty cases the writer came to the following conclusions:—Metaluetic aortitis is distinguished anatomically by its slow development, its simultaneous origin in the vascular layer of the media and the outer layer of the intima, by the subsequent invasion of the elastic layer, and by the scarcity of lesions in the adventitia. The rarity of atrophic phenomena in the media explains the slight degree of dilatation found in the first segment of the aorta, which is the part chiefly involved. Many symptoms of general paralysis arise from the aorta, even when it appears normal on superficial examination. If one's attention be confined to those forms with complete absence of general arteriosclerosis, atheroma, or renal lesions, and study be made only of incipient cases, disturbances of the cerebral circulation will be observed with vertigo, congestion, ischaemia, cardiac asthma, pulmonary congestion, and gastro-intestinal troubles, the reflex origin of which from the aorta appears probable. In the

simplest cases the heart sounds at the aorta are never pure, and not infrequently there is a systolic or diastolic bruit. The percussion signs are extremely variable. The sphygmogram of the simplest cases shows a fairly prolonged systolic plateau divided into two peaks, which show a certain degree of difficulty in the emptying of the left ventricle.

Metaluetic aortitis differs from the frank syphilitic form, but the two may coexist, just as general paralysis and cerebral syphilis do.

J. D. ROLLESTON.

**INSANITIES OTHER THAN GENERAL PARALYSIS OF THE**  
(560) **INSANE AND TABO-PARESIS, POSSIBLY DUE TO UN-**  
**DETECTED SYPHILIS.** W. A. T. LIND, *Med. Journ. of Australia*,  
1915, ii., Aug. 21, p. 168.

THE evidence submitted in favour of undetected syphilis being a factor in the production of insanity is (1) the great frequency of syphilitic post-mortem findings in the insane, and (2) the freedom of the insane from primary and secondary manifestations of syphilis. The reasons the cases are not detected during life are: 1. The Wassermann reaction does not reveal syphilis in all cases in which it is present. A certain type of known syphilitic disease exists which yields a low percentage of positive reactions, *e.g.*, tabes. 2. It is possible for individuals to be syphilitic without showing any sign of the disease. 3. The clinical symptoms may be masked by the mental state. 4. The inability to obtain correct heredity charts in many cases.

A. NINIAN BRUCE.

**THE CATATONIC TYPE OF DEMENTIA PRÆCOX: THE GENESIS**  
(561) **OF AUTO-INTOXICATION IN THE CATATONIC TYPE OF**  
**DEMENTIA PRÆCOX FROM A HEREDITARILY-TRANS-**  
**MITTED DEFECTIVE BIOCHEMISM.** G. DUNLOP ROBERTSON,  
*Journ. of Mental Sci.*, 1915, July, p. 392.

STARTING from the fact of an hereditary history of neuropathy in the majority of dementia præcox cases, and resting on Tredgold's dicta that the hereditary defect is not so much a "suppression of some specific germ determinant" as "a diminished germinal vitality," and that "this lessened potentiality is especially marked in that constituent which determines the development of the central nervous system—the neuronic determinant," the author proceeds to enlarge upon the disparity between the vitality in the functionings of the imperfect neuronic tissues and the more normal somatic tissues. This disparity should stand out clearly for the first time at the acme of full ontogenetic development—adolescence. Again, the attainment in adolescence of full sex



glandular development, with its reaction on the nervous system, brings into play a new and powerful factor. The nervous system, being hereditarily defective, will suffer strain in its endeavour to make an adequately reciprocal response. This strain, originating from stimuli from these specific organs, will be reflected, in the psychical processes, as ideation with an affect of "tensioned" character. The content of this ideation (consciously, from educatively acquired inhibitions), and the tension of its affect (unconsciously), condition the process of "transference of affect" which results. The affective colouring (aroused primarily from these specific organs) is spread over other complexes, and so gilds them as to charm the attention inwards, and thus cause day-dreaming—the "shut-in" personality—or autism. The continued spread of this peculiarly tensioned affect, throughout ideation, creates a state of subconscious emotion which would "well" over, escaping in conscious motor acts of relief were he in touch with his environment, but this the "shut-in" patient is not; the emotional tension is, therefore, relieved subconsciously through its physiological channel—the sympathetic. Chromaffin tissue is one of the end-organs of the sympathetic. The affinity in development of this tissue to the sympathetic nerve cells suggests an almost as severe condition of inherited defectiveness in them as appears in the neuronie tissue. The chromaffin tissue should, therefore, show a condition of "irritability of weakness" on stimulation by the sympathetic. Hyperfunctioning would be expected in the form of excessive secretion of adrenaline.

Evidences of adrenaline vasoconstriction in the cerebrum in hebephrenia are argued for, and of cerebral and somatic adrenaline toxæmia in catatonic dementia præcox. In connection with this the resultant axonal type of neuronie degeneration found in these cases is referred to.

Going upon the fact that a saturated solution of bichromate of potash gives a brown coloration, specific to chromaffin tissue, the author found a similar reaction in solutions of adrenaline chloride. Applying this test to the blood serum of a case of catatonic dementia præcox, he found that a deeper coloration (seen best in reflected light) was developed than in the case of the blood serum of a "control." This was interpreted as indicating the presence of excess of adrenaline in the catatonic dementia præcox case.

*Note not inserted in above paper.*—In certain recent cases of hebephrenic and catatonic dementia præcox, the author has found surprisingly quick resolution, and arrestment of symptoms, by the exhibition of pilocarpin as an autonomic stimulant.

AUTHOR'S ABSTRACT.

**ALCOHOLIC PSYCHOPATHIES.** CLARENCE G. GODFREY, *Med. Journ.* (562) *of Australia*, 1915, ii, Aug. 21, p. 163.

THE author divides the alcoholic psychoses into (1) delirium tremens, (2) *mania-a-potu*, (3) polyneuritic psychosis (Korsakoff's syndrome), (4) alcoholic pseudo-paresis, (5) chronic alcoholic hallucinosis, and (6) alcoholic dementia. A short description of each is given.

A. NINIAN BRUCE.

**PSYCHOSES AMONG NEGROES—A COMPARATIVE STUDY.** (563) E. M. GREEN, *Journ. Nerv. and Ment. Dis.*, 1914, xli, Nov., p. 697.

As the result of a study of the admissions to the Georgia State Sanatorium from 1909 to 1914, of which 3,291 were members of the white race, and 2,119 of the negro race, the following conclusions were arrived at:—

Brain tumour, traumatic psychoses, infective-exhaustive psychoses and allied states, psychoses accompanying pellagra, and epileptic psychoses were found with equal frequency in both races.

Psychoses accompanying nervous or brain disease, alcoholic psychoses, drug psychoses, involution melancholia, undifferentiated depressions, symptomatic depressions, paranoiac conditions, psycho-neuroses, constitutional inferiority, imbecility, and idiocy were more frequent in the white race.

Senile psychoses, general paralysis, dementia præcox, and manic-depressive psychoses were more frequent in the negro race.

A. NINIAN BRUCE.

## Reviews

**AN INTRODUCTION TO THE STUDY OF COLOUR VISION.** J. (564) HERBERT PARSONS. Pp. viii. + 308. 75 Figs. Cambridge Psychological Library. Cambridge, at the University Press. 1915. Pr. 12. 6d. net.

THIS volume represents the first of a series of books dealing with the various subjects which come within the field of psychology. It is a volume of great importance, not only on account of the vast amount of information which has been gathered together, but also because of the care which has been taken to sift this, and render it intelligible to the ordinary reader. The subject is essentially one of great difficulty, and the book is not easy reading, but this is not because the matter is not clear or accurate,

but because the field covered is so extensive, and embraces so many different and conflicting theories.

As the author points out in his preface, "the vast literature on colour vision consists almost entirely of papers written in support of some particular theory. It is particularly difficult to obtain a general and unbiased view of the subject. I have here endeavoured to separate the best established facts of colour vision from the theories, and have then discussed the chief theories in the light of these facts." It is a great advantage in a work like this that the author has no theory of his own to support, and is able to take an unbiased view of other people's work. He has, in fact, presented us here with an account of what others have done, and has succeeded in giving us a well-balanced and critical summary of practically all the most important papers on colour vision up to the present time. The book is divided into three parts. The first part gives "The Chief Facts of Normal Colour Vision," and discusses in turn the physical, anatomical, and psychological basis on which the perception of colour depends. It then deals with the spectrum as seen by the light-adapted (photopic) and by the dark-adapted (scotopic) eye, and shows how similar the condition of dark adaption is to colour blindness. Hue, luminosity, saturation, mixture of pure colour stimuli, colour fields, recurrent vision, flicker, and fatigue are all next considered, and four chapters are devoted to the most interesting subject of the comparative psychology and evolution of colour vision in animals and in primitive races, and its development in the child.

Part two is concerned with "The Chief Facts of Colour Blindness," as distinct from the theories evolved to explain them; while part three, on "The Chief Theories of Colour Vision," describes these theories, of which there are ten altogether, and points out the arguments in support and against each. Of these ten theories the three best known are the "duplicity theory," which states that achromatic scotopic vision is carried out by the rods alone, and the perception of colour depends on the cones. The "Young-Helmholtz theory" is based on the fact that every known colour can be represented by a mixture of red, green, violet, and black sensations, while "Hering's theory" postulates three pairs of primary colour sensations. Numerous references to the literature are given at the foot of each page.

On the subject of colour vision in all its aspects this book is a storehouse of information, and the success of the author in simplifying such a complicated subject is worthy of the highest praise, while the careful weighing of the evidence and scientific spirit displayed renders its careful perusal most instructive.

**CEREBELLAR LOCALISATION.** (*Localisation cérébelleuses.*)  
(565) ANDRÉ-THOMAS and A. DURUPT. Pp. iv. + 197, with 92 figures in the text. Vigot Frères, Paris. 1914. Pr. 6 francs.

A FULL account of the experiments and views of the authors upon the localisation of function in the cerebellum is given here. The book is divided into three parts. The first part consists of two chapters, the first upon the anatomy and comparative morphology of the cerebellum, and the second upon the present state of our knowledge of the physiology of the cerebellum and on cerebellar localisation. The second part deals with experimental investigations upon the dog and the monkey. The third part discusses the significance and interpretation of these results, and compares the findings obtained by experimental methods with those of clinical medicine.

Much of the authors' previous work has already been published (*v. Review*, 1915, xiii, p. 58), and has established their reputation in this particular field of work. Their views are here presented very clearly, and form a most interesting monograph. They consider that definite centres are present in the cerebellar hemispheres for the upper and lower limbs, and each of these centres may be divided into subsections, which are related to definite segments of a limb or to an articulation. These centres maintain the static tone of the muscles, and anything altering the position of the limb may call these centres into action, and if they be injured, accuracy of movement is lost, and a number of disturbances of active movement result, *e.g.*, forward movement may be too rapid, backward movement too slow, or *vice versa*; if the limb be placed in some unusual position, the animal may allow it to remain in this position, while, if an attempt be made to place it in the opposite position, excessive resistance is encountered; an absence of reaction may also be noted to stimuli originating in certain articulations. These findings can be established from a clinical study of cases in man quite as well as from experiments on animals, the two methods of research being in complete agreement, and an understanding of them is of the greatest importance for diagnosis. Conscious sensation is never affected; the condition is due to a failure to react to unconscious impulses arising from joints and other structures. If the cerebellum be injured the cerebrum compensates for the loss of cerebellar function, but rarely completely, any cause distracting attention tending to bring the loss of cerebellar function into evidence.

The whole question of cerebellar function is discussed here at considerable length. The facts are explained clearly under different headings, with numerous illustrations, and present the investigations of the authors in a manner which allows a grasp

to be taken not only of the advances which they themselves have made, but of the present state of our knowledge of cerebellar localisation. There is a good bibliography.

**THE CLINICAL POSITION OF SO-CALLED GENUINE EPILEPSY.**

(568) (*Die klinische Stellung der sogenannten genuinen Epilepsie.*)

Prof. Dr E. REDLICH and Prof. Dr O. BINSWANGER. Pp. 146. S. Karger, Berlin. 1913. Pr. M. 6.

THIS consists of two separate papers which were read at the German Neurological Society at Hamburg in 1912. The first paper, by Redlich, occupies 124 pages, and gives a very good account of the present state of our knowledge of epilepsy. He thinks the title "genuine" epilepsy should be abandoned. He considers epilepsy to be an organic cerebral disease, the morbid anatomy of which we do not yet understand. The whole subject is treated from all points of view with great understanding. The monograph is clearly written, and the reader is impressed by the knowledge of the literature and extent of clinical experience shown. There is a bibliography of 389 papers.

The second paper, by Binswanger, occupies only 21 pages, and is mostly concerned with the histological changes in epileptic brains. He does not think that epilepsy has yet been proved to be an organic brain disease.

**NERVOUS. (NERVÖS. Zwanzig Gespräche zwischen Arzt und**

(567) **Patient.)** Dr LUDWIG SCHOLZ. Pp. 188. S. Karger, Berlin. 1914.

Pr. M. 4, geb. M. 5.

TWENTY conversations between patient and doctor of a medical nature are recorded here upon subjects of special nervous interest, such as the causes of nervousness, the meaning of neurasthenia, psychasthenia, and hysteria, the views of Freud and their significance, anæmia, headache, hypnosis, sleeplessness, and many other similar subjects.

**DIE GESCHE GOTTFRIED. Eine Kriminalpsychologische Studie.**

(568) Dr L. SCHOLZ. Pp. vi.+160, with 6 figures. S. Karger, Berlin.

1913. Pr. M. 4.

THE account given here of the history of Gesche Margarete Gottfried will form particularly interesting reading for all interested in the psychology of criminals. She was born in Bremen on 6th March 1785, and was finally executed in 1831, after poisoning with arsenic a large number of persons, including her parents, children, both her husbands, and many of her dearest friends. Her object always consisted in a slow

and lingering death, in order that she should be able to nurse her victims during their illnesses, which she did with the greatest tenderness and care. The whole story is told in great detail, and is accompanied by numerous documents, and by six figures of the head and skull.

**COLLECTED CONTRIBUTIONS, 1914.** (a) Psychopathic Hospital (569) (Department of the Boston State Hospital); (b) State Board of Insanity. Issued 1915. Boston, Massachusetts.

THE present volume of bound reprints includes the periodical publications of a medical, social, scientific, and nonofficial character of (a) the psychopathic hospital, and (b) the pathological and research services of the State Board of the year 1914. The articles are classified as follows: (a) on medical diagnosis; (b) on medical treatment; (c) on mental hygiene; (d) on mental tests; (e) on psychiatric theory; and (f) on epidemiology and bacteriology. The collection of reprints has been issued under the editorship of Dr E. E. Southard, the director of the Psychopathic Department of the Boston State Hospital, and comprises about forty-three papers, most of which had previously appeared in the *Boston Medical and Surgical Journal*. Their collection in a volume of this kind is most useful and permits reference to be easily made besides allowing the amount of valuable work originating from this source to be realised.

#### BOOKS AND PAMPHLETS RECEIVED.

Healy, William. "The Individual Delinquent." A textbook of diagnosis and prognosis for all concerned in understanding offenders. Pp. xvi. + 830, with 10 plates. William Heinemann, London. Pr. 21s. net.

Newmark, L. "An angioma of the cerebellum" (*Journ. Nerv. and Ment. Dis.*, 1915, xlii., May).

Thomson, H. Campbell. "Diseases of the Nervous System." Second edition, revised and enlarged. Pp. xvii. + 553, with 22 plates. Cassell & Co., Ltd., London, 1915. Pr. 10s. 6d. net.

"Vagotonia," a clinical study in vegetative neurology. Dr Hans Eppinger and Dr Leo Hess. *Nervous and Mental Disease Monograph Series*, No. 20. New York, 1915. Pr. \$1.00.

"Wishfulfilment and Symbolism in Fairy Tales." Dr Franz Ricklin. *Nervous and Mental Disease Monograph Series*, No. 21. New York, 1915. Pr. \$1.00.

"Index of 458 Post-mortems of the Insane," Nos. 1181-1638. State Hospital for Insane, Norristown, Pa., U.S.A. Vol. II. Chas. J. Swalm and Abraham Mann. 1915.

# Review of Neurology and Psychiatry

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## Original Articles

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### THE THORACIC INNERVATION OF THE DIAPHRAGM.

By LEONARD J. KIDD, M.D.

- 1 *Introduction*; 2. *Anatomical and Histological Observations*;  
3. *Physiological Observations*; 4. *Clinico-Pathological Con-*  
*siderations*; 5. *Physiological Importance*; 6. *Conclusions*.

#### 1. INTRODUCTION.

A MANUSCRIPT of a paper on the thoracic innervation of the mammalian diaphragm has been slumbering in my desk for six years. But the time seems to have come to publish it, as the subject is worthy of attention by clinicians. Although nearly a century has passed since the existence of such an innervation was discovered in the case of the diaphragm of Man, yet it appears to be true, even to-day, that the fact is but little known, except by Professional Anatomists. A neurological friend, of wide reading, to whom I mentioned the matter, was much surprised to hear of it, and only a year ago Oppenheim \* stated that he had been surprised to find in several instances of tumour of the upper cervical spinal cord how little the phrenic nerve was affected, even when the site of the lesion was at, or just above, the origin of that nerve, and even when the presence of the tumour had led to an

\* H. Oppenheim, *Neurol. Centralblatt.*, 1914, xxxiii., p. 982.

accumulation of cerebro-spinal fluid below it. He supposed that the diaphragm cannot be innervated solely by the phrenic nerves; but he did not carry the subject any further.

Now, quite apart from any positive anatomical, histological, or experimental evidence of the existence of a thoracic innervation of the mammalian diaphragm, we should on *a priori* grounds be prepared to accept it as at least probable. We must not make too much of the fact that in most birds the phrenic nerves are absent, and their two so-called diaphragms are innervated by intercostal nerves. But there are embryological reasons which would prepare us to accept a thoracic innervation of the mammalian diaphragm. The primitive mammalian diaphragm is derived from the musculature of cervical myotomes which invades the septum transversum. At a later stage, according to Keith, the diaphragm receives muscle tissue from the transversalis and rectus sheets. If, then, any part of the mammalian diaphragm have an innervation from the thoracic segments of the spinal cord, and from thoracic dorsal-root ganglia, it will be this later developed part. The difficult subject of the development of the diaphragm is very clearly summarised by Bryce\* thus: "The supply of the muscle by the phrenic nerves shows that part of it is a derivative of cervical myotomes which are displaced backwards as the diaphragm sinks to its permanent level." This passage suggests that the remainder of the diaphragm must be innervated from some level of the spinal cord caudal to the phrenic motor nucleus. Bryce also accepts Broman's teaching that a certain portion of the circumference of the diaphragm is derived from the body wall.

## 2. ANATOMICAL AND HISTOLOGICAL OBSERVATIONS.

An innervation of the human diaphragm from the lower intercostal nerves was discovered almost a century ago by several of those accurate observers, the dissecting anatomists. Thus, in 1817, Meckel described<sup>1</sup> filaments which are given off by the eighth to the twelfth intercostal nerves to the diaphragm. An intercostal innervation of the diaphragm was described also by Baur<sup>2</sup> in 1818. In 1830 Joseph Swan gave<sup>3</sup> a very explicit account of this innervation: he describes a filament or filaments

\* T. H. Bryce, "Quain's Anatomy," 1908, Vol. i., "Embryology," p. 243.



to the diaphragm from the sixth, eighth, ninth, tenth, eleventh, and twelfth intercostal nerves. Of these nerves, the ninth sends a filament, the tenth "some very minute filaments," and the four other nerves send filaments: it is noteworthy that Swan seems to have failed to find any diaphragmatic filament from the seventh intercostal nerve. In 1841 Valentin<sup>4</sup> found diaphragmatic filaments coming from the tenth, eleventh, and twelfth intercostal nerves. In 1853, and again in 1862, Luschka<sup>5</sup> described very fine filaments coming from the seventh to the twelfth intercostal nerves, which are distributed to the costal part of the diaphragm: they accompany the fine branches of the musculophrenic branch of the internal mammary artery. Luschka called these diaphragmatic filaments "motor"; we can easily understand this, for in his day any nerve-branch which went to a muscle was called motor, and the conception of "muscle-afferent" nerve fibres was seldom, if ever, formed. And even to-day, twenty years after Sherrington's ever-memorable discovery of afferent fibres in purely muscular nerves, most writers seem to think that the terms "muscular" nerves and "motor" nerves are synonymous.

A great advance was made in the year 1888 by Pansini,<sup>6</sup> for he seems to have been the first observer to reinforce the dissection method by histological examination. He studied by special histological methods the terminations of the phrenic nerves in the mammalian diaphragm; he worked on guinea-pigs, rabbits, and foetal dogs and cats, but his description of the special plexuses which he discovered in the diaphragm is based on his study of rabbits and guinea-pigs. He found that the terminal filaments of the diaphragmatic branches of the phrenic nerves form with the three lowest intercostal nerves an intricate plexus in the wall of the diaphragm, and this plexus contains microscopical ganglia. The plexus was divisible into two parts, viz., (1) an anterior or sterno-costal, and (2) a posterior or lateral, with the lowest three intercostal nerves to the lumbo-vertebral part of the diaphragm; it was especially in this latter part of the plexus that the microscopical ganglia were found. Pansini held that the physiological importance of this plexus was that it provides for a better contraction of all the muscular fibres of the diaphragm; and he believed that the small ganglia of the plexus are of importance for the function of respiration, and that their action is automatic. He laid stress

on the teaching of some physiologists that there are, in addition to the bulbar respiratory centre, similar centres in the cervical and thoracic regions of the spinal cord. It is important to note that, whereas Luschka found by the dissection method that the intercostal nerve supply of the human diaphragm is costal, Pansini, working by histological method, found it to be lumbo-vertebral in other mammals.

In 1891 Ellenberger and Baum<sup>7</sup> found that in the dog the lowest five or six intercostal nerves send twigs to the diaphragm.

In 1896 Cavalié<sup>8</sup> gave a most careful macroscopical and microscopical description of six adult human diaphragms. His procedure was as follows: He cut through the vertebral column vertically with a saw in the middle line, so as to divide the diaphragm into two halves; then he proceeded to dissect the two halves after a few days' preliminary maceration in a dilute solution of nitric acid. He insists on the great importance of a microscopical examination, for the intercostal diaphragmatic filaments are sometimes very slender, and it is also important to avoid the mistake of regarding a small vessel or a fragment of aponeurosis for a nerve filament. Cavalié gives an anatomical description of the route by which the diaphragmatic filaments of the lower intercostal nerves reach the diaphragm; these filaments enter the muscular tissue of the diaphragm, and sometimes they are accompanied by branches of the intercostal blood vessels. Each intercostal nerve sends five or six branches to its half of the diaphragm; the distribution of these branches extends for a very short distance on the marginal part of the diaphragm. He failed to find any anastomosis of these filaments with the terminal diaphragmatic branches of the phrenic nerves, nor could he find any of the intra-diaphragmatic microscopic ganglia described by Pansini. The branches to the diaphragm were found by Cavalié to come from the six lowest intercostal nerves, and he could not find any from the sixth intercostal nerve. The eleventh, eighth, and seventh intercostal nerves had the largest area of distribution on the diaphragm, and the ninth, tenth, and twelfth a relatively small one. In a second paper, published in 1898, Cavalié recorded some further anatomo-histological studies on this subject: he added an account of four more human dissections, thus bringing up the number of his observations to twenty half-diaphragms. He confirmed his earlier work, and found in addition that a similar

intercostal innervation was present in the diaphragm of dogs, rabbits, guinea-pigs, and rats. He studied also, by various methods, the innervation of the two avian diaphragms: his work was done on the cock, duck, pigeon, and sparrow-hawk. His results may be summarised thus: The dog's diaphragm receives fibres from the last seven intercostal nerves, but chiefly from the eighth, ninth, tenth, and eleventh: the area thus supplied is one and a half centimetres in length. In the mammals Cavalié describes various plexuses, but he could not definitely demonstrate any true anastomoses between the filaments of these plexuses. In rabbits, rats, and guinea-pigs the diaphragm receives an innervation from the eighth to the twelfth intercostal nerves, and occasionally from the seventh also. He states that the dog's diaphragm sometimes has a vagus innervation. He established the extremely important fact that section of the lower intercostal nerve branches in the dog was followed at a later date by a degeneration of some of the marginal muscular fibres of the diaphragm. He found that the diaphragms of birds receive their innervation from the third, fourth, fifth, and sixth intercostal nerves; they receive also a vagus and a sympathetic innervation. Cavalié describes the intercostal innervation of birds and mammals as motor. He concluded that in mammals this thoracic innervation of the diaphragm plays a certain part in respiration, and can, up to a certain point, replace the phrenic innervation, but is less important than the latter. In the same year (1898) appeared Cavalié's thesis.\* I have failed to obtain it, but Halls Dally states<sup>13</sup> that in that thesis Cavalié "recognises three phylogenetic stages in the nerve supply of the diaphragm. In the first stage, found only in vertebrates below birds, the diaphragm is supplied only by one dorsal set of nerves, the intercostals. In the second, in birds, two sets are found, viz., the intercostal nerves to the costal diaphragm, and the sympathetic system with the dorsal ganglia to both diaphragms. In the last stage, in mammals and particularly in Man, a third source, the phrenic nerve, which becomes preponderant, is superadded.

Some of these statements of Cavalié need correction, in the light of the facts brought out by Keith's study<sup>11</sup> of the development and comparative anatomy of the diaphragm. Keith remarks that, according

\* M. Cavalié, "De l'innervation du Diaphragme." Toulouse, 1898.

to von Gossnitz,<sup>10</sup> the mammalian phrenic nerve, when it reaches the diaphragm, divides into a ventral division which supplies the sternocostal part and a dorsal to the spinal part of the diaphragm. Keith shows that in an African toad, *Xenopus*, the two nerves which represent the phrenic nerve of mammals come off from the second and third spinal nerves; these two nerve branches pass respectively to the ventral part of the amphibian diaphragm and to its dorsal part; the ventral part of the diaphragm is derived from the deep rectus abdominis, the dorsal part from the anterior (cervical) part of the transversalis. Keith mentions also that in birds the muscular part of the diaphragm is supplied by intercostal nerves, and that "although a phrenic nerve is present, at least in the ostrich, it ends merely in the pericardium and fibrous tissue of the diaphragm." We learn, then, from these facts, that the phrenic innervation of the mammalian diaphragm was foreshadowed in the cervical innervation of, at any rate, *Anuran amphibia*, and that most birds have lost their phrenic nerve entirely, whereas at least one of them, the ostrich, has retained a part of its phrenic (or cervical nerve) innervation. Thus, in respect of the nerve supply of the diaphragm, mammals have retained the cervical innervation of their amphibian ancestors.

In the year 1901 two observers, viz., (1) P. Eisler\* and (2) W. von Gossnitz,\* described a sensory innervation of the diaphragm by the intercostal nerves; the latter writer is said to have failed to find any motor supply of the diaphragm by the intercostal nerves.

In 1906 Ramström<sup>12</sup> made a careful study of the nerves of the diaphragm. He says that a double innervation of that muscle is improbable, and he describes the phrenic nerve as its only motor nerve. But he shows that, although the phrenic nerve gives off sensory branches to the entire pleural investment of the diaphragm, yet both the pleural and the peritoneal investment at the rim receive sensory branches from the fifth to the twelfth intercostal nerves.

In 1908 Halls Dally published<sup>13</sup> a most valuable and exhaustive thesis on the diaphragm. He failed to find the small intrinsic ganglia in the diaphragm of rabbits, which Pansini described. He accepts the doctrine that the mammalian diaphragm receives motor fibres from the seventh to the twelfth intercostal nerves, "which also contribute to the sensory supply

\* Cited by Ramström.

of the periphery of the muscle." He also states that fibres for the supply of the blood vessels are supplied by the sympathetic system.

In my opinion the whole question of a sympathetic innervation of the diaphragm badly needs a well-planned modern experimental inquiry. I think it is almost certain that all the sympathetic filaments of the mammalian—and probably also the avian—diaphragm are vasomotor to the blood vessels of the diaphragm. As far as I know, the diaphragm of all air-breathing vertebrates is composed exclusively of striped muscle. It is difficult to see how the sympathetic nervous system could innervate the muscle of the diaphragm except on one unproven hypothesis, viz., that some part of it might be composed of muscle tissue resembling the heart muscle in being histologically intermediate in type between striped and unstriped muscle. A good deal depends on the solution of this question; for, if the diaphragm really has any truly automatic action, it is important that we should know of it. Long ago it was affirmed by Brown-Séquard and by Vulpian that automatic contractions of the diaphragm sometimes occur after death.

In the year 1909 Johnston<sup>14</sup> studied the question of the distribution of the intercostal nerves of man by a special method of dissection, which he describes, reinforced by microscopical study. He points out that in no region of the body is it easier to manufacture nerves than in this. He found, among other things, that "at the lower part of the thorax fine filaments proceeded from adjacent nerve trunks and formed together upon an intercostal artery, and in at least one instance reached the upper surface of the diaphragm. These nerves could be followed along the course of the artery into the abdominal wall."

Many writers on descriptive human anatomy accept the intercostal innervation of the diaphragm. One may mention Thane in "Quain's Anatomy," 1895; Schäfer and Symington in the same work (1909); Testut (1899); Soulié in Poirier's work (1899); and Hamann in "Piersol's Anatomy" (1907). Finally, Lennander<sup>15</sup> wrote in 1909: "The entire diaphragm, except the rim, derives its pain-conducting nerves from the phrenic nerves. The rim is supplied by the seven lower intercostal nerves." One point should be borne in mind, viz., that Cavalé found, both in man and in other mammals, that individual variations in the number of intercostal nerves, which send filaments to the diaphragm, are

fairly common. On the whole, we may conclude that in man these filaments come from the seventh to the twelfth intercostal nerves usually, and occasionally from the sixth also. I think we must admit, with admiration, that Meckel, Baur, Swan, Valentin, and Luschka did not "manufacture" an intercostal innervation of the human diaphragm. The careful histological studies of Pansini, and even more those of Cavalié, have proved beyond doubt the existence of such an innervation in man and other mammals. In the next section I hope to show that there is also experimental proof of its existence, in the dog at any rate. Meanwhile, one may summarise thus the anatomical and histological findings of various observers: the diaphragm of man receives fibres from the six or seven lowest intercostal nerves; that of the dog from the seven lowest (Cavalié), the three lowest (Ellenberger and Baum): Cavalié's figures are the more reliable; the diaphragm of the rabbit and of the guinea-pig from the five or six lowest intercostals (Cavalié), from the three lowest (Pansini); and the diaphragm of the rat from the five or six lowest (Cavalié).

### 3. PHYSIOLOGICAL OBSERVATIONS.

In the year 1898 Billard and Cavalié,<sup>9</sup> having proved by dissection combined with histological studies that there is an intercostal innervation of the periphery of the diaphragm of dogs, rabbits, guinea-pigs, and rats, proceeded to apply the test of electrical stimulation to the peripheral ends of these divided intercostal nerves beyond the point of emergence of the perforating lateral branches. The result was that in every case there was produced a visible contraction of the diaphragm in the region supplied by the particular nerve which was being stimulated. The area of diaphragmatic contraction was about 3 cm. wide in the neighbourhood of the ribs, and of about the same length in the direction of the muscular fibres. The area of this partial contraction of the diaphragm was especially marked in rabbits, guinea-pigs, and rats, and was of slightly greater proportional extent than in dogs. The greatest degree of muscular contraction was obtained from stimulation of the tenth and the eleventh intercostal nerves. Graphic tracings were taken of the diaphragmatic contractions: these were of feeble amplitude, and not to be compared with the contraction of almost the whole of the

diaphragm which was evoked by stimulation of the phrenic nerves. Billard and Cavalié concluded from their experiments that the diaphragmatic filaments of the lower intercostal nerves contain motor fibres. In addition, they made an experimental study of the question, whether this motor intercostal innervation of the diaphragm could act physiologically as a substitute for the phrenic innervation. Accordingly, they performed bilateral resection of the phrenic nerves: (a) in dogs, which possess a costo-abdominal type of respiration, and (b) in rabbits, rats, and guinea-pigs, whose respiration is exclusively abdominal. The latter group of animals always died after an interval of from three to five hours, whereas dogs commonly survived the operation, and showed an inverted type of respiration. The conclusion was that the motor intercostal innervation of the diaphragm could not replace the lost phrenic innervation. In a later paper, these two observers showed that a marked degree of emaciation occurred in the dogs which survived bilateral phrenic nerve resection. The same observation had been previously recorded by Henocque and Eloy.\* In concluding this section of my paper I may again remind the reader that Cavalié (1898) showed that section of the dog's lower intercostal nerve branches was followed by degeneration of the marginal muscular fibres of the diaphragm.

#### 4. CLINICO-PATHOLOGICAL CONSIDERATIONS.

It will now be clear to every one that most of us have been overlooking the element of an involvement of a part of the diaphragm in a large number of clinical cases. And I believe I am correct in saying that no pathologist has ever discovered evidence of this involvement, the reason being that it has never been looked for histologically. One need mention only a few of the lesions which must often lead to a degeneration of the diaphragmatic nerve filaments, with a resulting slight defect in respiration, sometimes unilateral, sometimes bilateral. It seems to me to be almost certain that this thoracic innervation of the diaphragm is both motor and afferent; and, to judge by the phrenic area of the diaphragm, which has been proved to be both motor and sensory, this thoracic innervation is sensory as well as

\* Henocque and Eloy, *Compt. Rend. de la Soc. de Biol.*, 1882, Sér. 7, t. 4, p. 572.

motor. It must, then, often suffer in cases of injuries of the mid- and lower thoracic region ; in neoplasms of the spinal cord, nerve roots both ventral and dorsal, root ganglia, membranes, and bones ; in some cases of progressive muscular atrophy, poliomyelitis, hæmatomyelia, syringomyelia, tabes, disseminated sclerosis, syphilis, combined degenerations of the spinal cord, herpes zoster, and many other conditions. How could we determine in any case that this thoracic diaphragmatic innervation was defective on either one or both sides ? Here I must remark, in advance, that I believe this particular innervation comes into force during deep and during forced inspiration, and thus reinforces the inspiratory action of the intercostal muscles. If I be right, it is clear that mere inspection or palpation or mensuration of the thorax and abdomen during quiet easy respiration would fail to settle the question whether this intercostal innervation of the costal part of the diaphragm is affected or not. We must make the patient inspire very deeply, and we must pay especial attention to the costal region, and compare the appearance on one side with that on the other side. A definite failure to inspire deeply would strongly suggest an involvement of this innervation. Possibly the orthodiagraph might be of diagnostic value. Electrical testing would hardly be reliable, I think, in clinical work. But in any case, the subject of the thoracic innervation of the diaphragm is worthy of much more clinical study than anyone has yet given to it. I take it that one of the reasons why so many patients who suffer from spinal lesions die from intercurrent broncho-pulmonary infective lesions is because their intercostal diaphragmatic innervation, together with the innervation of their intercostal muscles, is seriously damaged on either its motor or its afferent side, or on both ; and this damage must very often occur to both costal regions of the diaphragm. We may remember with advantage, from the point of view of prognosis, that if there be a diminution or a loss of Faradic reaction in the lower intercostal muscles in any given case, it is highly probable that the intercostal innervation of the diaphragm has also been damaged by the lesion. I suppose that the explanation of the puzzling phenomenon noted by Oppenheim, to which I alluded in the introductory section of this paper, is a two-fold one—the relatively slight respiratory embarrassment seen in some cases of tumour involving the phrenic nucleus and its roots is due partly to the escape of the intercostal



innervation of the diaphragm from injury; and, partly, it is possible that the damage to phrenic neurones, in at any rate some of these cases, may not be so severe as it seems to be. Every now and then it happens that neurones continue to do much useful work even after severe compression. As far as I know, spasticity of respiratory muscles is of no clinical importance, so that in cervical cord lesions the diaphragm and the intercostal muscles continue to do their inspiratory work perfectly.

##### 5. THE PHYSIOLOGICAL IMPORTANCE OF THE THORACIC INNERVATION OF THE DIAPHRAGM.

We must, I think, agree with Billard and Cavalié,<sup>9</sup> that the thoracic innervation of the costal area of the mammalian diaphragm cannot effectually replace the loss or destruction of the phrenic innervation. It may be true that in some cases, as in the dog, and probably even in man, the former innervation may keep the respiration working fairly well for at least some days or weeks (in dogs), provided a very quiet, sheltered life be led. But anything like a severe or a prolonged call on it for powerful, deep inspiration cannot be expected to evoke an adequate response, even although it is true (for man at any rate) that the costal area of the diaphragm is supplied by the phrenic nerve as well as by the intercostal nerves. We must not, however, conclude that this thoracic innervation of the diaphragm, small though it be when compared with the phrenic innervation, is of no value. Nature, whose motto is efficiency, can hardly have been so foolish as to have wasted time and good material on a useless innervation. I can see no escape from the conclusion that the value of this relatively small intercostal innervation of the costal area of the diaphragm is that it comes into play during deep and during forced inspiration. If this be true, it must reinforce the inspiratory action of the intercostal muscles. We must regard costal breathing as a superior physiological mechanism to abdominal: the former is needed whenever a supreme physical effort has to be made for a prolonged period, as in fight or flight from enemies, and it must play an important part in wild nature in enabling animals to survive and carry on the species.

There are certain points concerning the intercostal innervation of the diaphragm which the experimentalist might settle. One

would like to have a study made on the question whether part of this innervation comes from the lower six or seven thoracic dorsal-root ganglia. The degeneration method and the retrograde chromolysis method could both be applied: the latter might be difficult of performance, but probably it would be successful if, as soon as a presumed diaphragmatic nerve filament had been divided, electrical stimulation were applied to the distal end. It appears probable that this intercostal diaphragmatic innervation comes solely from its own side of the spinal cord and spinal ganglia, and that there are no true anastomoses on the diaphragm between it and the terminal ramifications of the phrenic nerve. Nothing appears to be known as to the exact situation, in the thoracic spinal cord, of the cells of origin of the motor fibres which pass by the six or seven lower intercostal nerves to the mammalian diaphragm. But we know by the work of Kohnstamm, Sano, Alexander Bruce, and Marinesco that the motor nucleus of the phrenic nerve is situated to the outer side of the ventro-mesial cell group of the ventral horn; and we should expect from this that the cells of origin of the motor fibres of the intercostal innervation of the diaphragm are situated in a corresponding, or nearly corresponding, region of the ventral horns of the lower thoracic region of the spinal cord: the retrograde chromolysis method might settle the question. Nothing appears to be known as to the calibre of the neurones of this intercostal innervation of the diaphragm; but I should expect that they are even smaller than the small neurones of which, according to W. H. Gaskell, the rabbit's phrenic nerve is composed. The reasons for this belief will be evident on a study of my recent paper on the "factors which determine the calibre of nerve cells and fibres."\* In conclusion, I may add that there are some anatomical and physiological points of great interest which arise out of the experimental work of Porter† and others‡ in the so-called "Porter experiment" that will undoubtedly receive experimental attention from some of those who are specially interested in the physiology of respiration.

\* L. J. Kidd, *Rev. Neurol. and Psychiatry*, 1915, xiii., Sept., p. 409.

† W. T. Porter, *Journ. of Physiol.*, 1895, xvii., p. 455.

‡ J. Deason and L. G. Robb, *Amer. Journ. of Physiol.*, 1911, xxviii., p. 57.

6. CONCLUSIONS.

1. A thoracic innervation of the diaphragm has been proved to exist in man, dog, rabbit, guinea-pig, and foetal cat.

2. In man this innervation comes from the six or seven lower intercostal nerves. It supplies the costal area of the diaphragm, which is also supplied by the phrenic nerve. The intercostal innervation of the diaphragm is a much smaller one than the phrenic innervation.

3. The intercostal innervation of the diaphragm is almost certainly both motor and afferent (sensory). The motor innervation comes from the ventral horns of the sixth or seventh to the twelfth thoracic segments of the spinal cord; the afferent innervation from the corresponding root ganglia. Both innervations are direct (uncrossed).

4. Though this innervation is a relatively small one, yet it is of much physiological importance. It comes into use during deep and during forced respiration: it thus reinforces the inspiratory action of the intercostal muscles.

5. But it cannot, even in the dog or man, effectually replace physiologically the damaged or destroyed phrenic innervation for more than a few days or weeks (dog); and even that is possible only if a quiet life be ensured.

6. This intercostal innervation of the diaphragm is injured, or destroyed, by many lesions involving the mid- and lower thoracic region of the spinal cord, roots, ganglia, membranes, and bones: this damage may be unilateral or bilateral: there is commonly present a simultaneous paresis or paralysis of intercostal muscles. In order to detect this damage, we must make the patient attempt to inspire deeply. Probably the damage done to this intercostal innervation of the diaphragm in cases of spinal lesions is one of the reasons why these patients are so prone to die from intercurrent infective broncho-pulmonary conditions.

7. It is doubtful whether the alleged automatic action of the diaphragm has any existence; and also whether there is a true anastomosis between the terminal ramifications of the lower intercostal nerves with those of the phrenic nerve in the substance of the diaphragm.

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## Abstracts

### ANATOMY.

**THE DEVELOPMENT OF THE VENOUS SINUSES OF THE DURA**  
 (570) **MATER IN THE HUMAN EMBRYO.** GEORGE L. STREETER,  
*Amer. Journ. Anatomy*, 1915, xviii., Sept., p. 145 (17 figs.).

The development may be analysed as follows:—

1. There is first the establishment of the primary arrangement for the drainage of the head. This consists of a "primary head vein," which starts in the region of the midbrain and ends at the duct of Cuvier,

2. This is followed by a separation of the veins of the head into two, and finally three, separate layers or strata, of which the middle layer constitutes the dural veins.

3. Certain adjustments of the dural channels are made necessary by the environmental changes in the region of the middle and internal ear.

4. Similar and still greater adjustments of the dural channels follow the marked growth and change in form of the brain.

5. Late histological changes occur in the vein walls which convert them into the adult sinuses.

The first four features are outlined in this paper, the fifth is omitted.

A. NINIAN BRUCE.

**THE ARRANGEMENT AND DISTRIBUTION OF THE NERVES  
(571) IN CERTAIN MAMMALIAN OVARIES.**

W. ABEL and A. LOUISE M'ILROY, *Proc. Roy. Soc. Med.*, 1913, vi., May (Obstet. and Gynæcol. Sect.), p. 240.

THE ovary in the cat, dog, and rabbit is richly supplied with nerves which enter at the hilum. In the ovarian tissue the nerves are divided into three sets, a vascular, a follicular, and an interstitial set, which all anastomose. On the course of the nerves numerous varicosities are found, while groups of very small cells are found in connection with the interstitial set. The follicular nerves lie in the tunicae intima and externa, and do not pass into the membrana granulosa. The function of the ovarian nerves is primarily vasomotor.

A. NINIAN BRUCE.

**PHYSIOLOGY.**

**THE DEATH TEMPERATURE OF NERVE.** W. D. HALLIBURTON,  
(572) *Quart. Journ. Exp. Physiol.*, 1915, ix., p. 193.

ALCOCK, taking the electrical galvanometric response of nerve as a sign of life, found that the temperature at which this is extinguished is in the frog 40°-42°, in the mammal 48°-49°, and in the bird 53° C. He pointed out that the proteins of nervous tissue are numerous, and coagulate at various temperatures, and that this temperature corresponds to that at which nervous irritability disappears. Drawing an analogy between nerve and muscle, he further pointed out that muscle loses its irritability at the coagulation temperature of the first of the series of muscle-proteins (frog 40° and mammal 47° C.). He forecast that when the proteins of the frog's nervous system were examined, one would

be found to coagulate about 40° C., and that the proteins coagulating at 40° and 48° C. would be found absent from the nerves of the bird.

The author tested this, and thinks there can be no doubt that the cause of death in frog's nerve, when it is heated, is the coagulation of the protein with the lowest heat-coagulation temperature which is contained within its protoplasm. The temperature of nerve death is higher in warm-blooded animals, and this again coincides with the fact that the coagulation of the first protein of the series is higher in these animals.

A. NINIAN BRUCE

# **THE AUTONOMIC OR VEGETATIVE NERVOUS SYSTEM.**

(573) WALTER TIMME, *Journ. Nerv. and Ment. Dis.*, 1914, xli, Dec., p. 745.

THIS paper is for the most part an acceptance of the views and classification of Langley, and in it is discussed the anatomy, physiology, pathology, and pharmacological affinities of the autonomic system.

The author emphasises the confusion which has existed in regard to the autonomic system, but he has been able to present the subject in a simple, clear way.

The paper is one which cannot very well be abstracted.

D. K. HENDERSON.

# **MODIFICATIONS OF BLOOD PRESSURE AND OF BODY GROWTH IN RABBITS, FOLLOWING INJECTIONS OF PINEAL EXTRACT.**

(574) (Modifications dans la pression sanguine et dans l'accroissement somatique des lapins, à la suite d'injections d'extrait de glande pinéale.) N. DEL PRIORE, *Arch. ital. de Biol.*, 1915, lxiii., 28 Juin, p. 122.

INTRAVENOUS injections of 2 to 3 cub. mm. of the juice of sheep's pineals, obtained by aseptic trituration of the glands, centrifuging, and filtering, were given to very young rabbits. The result was always a rapid, marked fall of arterial pressure, which often lasted a long time. Doses larger than this were fatal: there was a severe, rapid fall of arterial pressure, often convulsions, and dyspnoea. In his experiments on body growth Del Priore used rabbits aged 10 to 85 days: every five or six days, during a period of two to three months, he injected a constant amount of a glycerine extract of pineal gland. The result was a rather marked retardation of body growth and weight, and a smaller growth of the long bones: this was more evident in the females. The injected females became pregnant.

LEONARD J. KIDD.

## PSYCHOLOGY.

**THE INTEGRATIVE FUNCTIONS OF THE NERVOUS SYSTEM**  
 (575) **APPLIED TO SOME REACTIONS IN HUMAN BEHAVIOUR**  
**AND THEIR ATTENDING PSYCHIC FUNCTIONS.** E. J.  
 KEMPF, *Psychoanalytic Review*, 1915, April, p. 152.

AN attempt is made to correlate the newer dynamic conceptions of psychopathology with Sherrington's work on the integrative functions of the nervous system. Thus, on the neurological side it is held that inhibition of the flow of nervous energy into the voluntary muscular system in response to an appropriate stimulus may result in a diverted overflow into the paths leading to the involuntary muscular system, a conception especially valid in the case of the emotions. This may correspond with the visceral and circulatory changes that from the psychological side are known to follow from repression of emotions as the result of intrapsychical conflicts. Quoting a remark of Sherrington's that "the alliance of like reflexes and interference of unlike reflexes in their actions upon their common path seem to lie at the very root of the great psychical processes of attention," the writer proceeds to illustrate this by the (repressing) inhibitions that occur in the process of attention during the word association experiment. The co-ordination of convergent impulses having a common afferent outlet, as pointed out by Sherrington, is illustrated by failures in co-ordination of psychical impulses (slips in everyday life). Several clinical cases bearing on these matters are narrated.

ERNEST JONES.

**THE ATTITUDE OF THE PSYCHO-ANALYTIC PHYSICIAN**  
 (576) **TOWARDS THE PROBLEM OF CURRENT CONFLICTS.**  
 (Die Stellungnahme des psychoanalytischen Arztes zu den  
 aktuellen Konflikten.) ERNEST JONES, *Internat. Zeitschr. f. ärztl.*  
*Psychoanalyse*, Jahrg. II., S. 6.

THIS is one of the respects in which the psycho-analytic method differs most sharply in its principles and practice from other mental methods of treatment. When, as is always the case, a neurotic patient is faced with some current dilemma, problem, grief, disappointment, &c., and is in doubt as to the best way of dealing with it, he has several strong motives for leaving the responsibility for the decision to the physician, and depending on him for his advice. The latter also is influenced by various motives, some conscious, others unconscious, for adopting the usual easy method of merely propounding his own solution to the patient, and urging his acceptance of it. The psycho-analyst, on the other hand, contravenes his own principles if he allows himself to act in this

way. In such a situation he has to confine himself entirely to the task of making clear to the patient what are the unconscious influences affecting his judgement and feelings, in the knowledge that when the underlying unconscious conflicts are solved the solution of the conscious, current ones will automatically result. The reasons for, and advantages of, this attitude are pointed out.

AUTHOR'S ABSTRACT.

**A CONSTITUTIONAL BASIS OF LOCOMOTOR ANXIETY.** (Über (577) *eine konstitutionelle Grundlage der lokomotorischen Angst.*) ABRAHAM, *Internat. Zeitschr. f. ärztl. Psychoanalyse*, Jahrg. II., S. 143.

DEALING particularly with the cases of topophobia where the patient is unable, because of his dread of being overtaken by panic, to travel or even to leave the house except in the company of a definite person, usually a near relative, Abraham remarks first on the importance of incestuous fixation in the ætiology. There must, however, be present more specific factors determining the choice of just this particular symptom. These he finds, on the basis of investigations, some of which are here related, in imperfect repression of the capacity that movement *per se* has to cause sexual excitation, a capacity which appears to be abnormally strongly developed in patients of this class, with whom the original pleasure has later become transformed, as so often happens, into dread.

ERNEST JONES.

**THE SIGNIFICANCE OF THE GRANDFATHER FOR THE FATE** (578) **OF THE INDIVIDUAL.** (*Die Bedeutung des Grossvaters für das Schicksal des Einzelnen.*) ERNEST JONES, *Internat. Zeitschr. f. ärztl. Psychoanalyse*, Jahrg. I., S. 219.

A DISCUSSION of the typical respects in which a child's thoughts and feelings about his or her grandfather may influence his later development, and the differences between the father and the grandfather in this respect. Attention is called to the frequent occurrence of what is called the "reversal of generation" fantasy, in which the child identifies himself with his grandparent, thus becoming in his fancy the parent of his own father. As a later result of this, many feelings may become transferred on to his actual son or daughter which had their origin in connection with his own father or mother. Light is thus thrown on the law of alternation of generation characteristic of genius, drunkenness, and other phenomena.

AUTHOR'S ABSTRACT.



## PATHOLOGY.

**MILIARY ANEURYSMS IN RELATION TO CEREBRAL (579) HÆMORRHAGE.** THEODORE SHENNAN, *Edinburgh Med. Journ.*, 1915, xv., Oct., p. 245 (14 figs.).

SIR WILLIAM GULL, in 1859, was the first to demonstrate the rupture of a miliary aneurysm as the origin and source of a cerebral hæmorrhage. Charlewood Turner in 1882 confirmed the view of Charcot and Bouchard as to the presence of peri-arteritis, but added that he was doubtful if the hæmorrhage resulted from the rupture of a miliary aneurysm, being rather more directly due to the rupture of vessels weakened by inflammatory softenings of their walls.

Professor Shennan has examined the vessels in five cases of cerebral hæmorrhage, and comes to the following conclusions:—

Cerebral hæmorrhage results from—

1. Rupture of diseased arterioles, which may undergo a preliminary local dilatation. This dilatation probably in most cases immediately precedes the rupture, and is not pre-existent in the form of an aneurysm. These local dilatations vary greatly in shape and size, but are usually of larger size than is associated with the term "miliary." The importance of the last point seems to be over-emphasised by German writers. Or—

2. It may follow the formation of a dissecting aneurysm, which develops in a manner similar to that of dissecting aneurysms occurring on the large arterial trunks.

True miliary aneurysms are not at all common, if, indeed, they exist at all, at the sites of cerebral hæmorrhage. That peri-arteritis is commonly present is correct. As in these cases, arterioles in other parts of the body are also diseased: the reason they tend to rupture in the brain is because their walls are thinner or more friable, are surrounded by a large adventitial lymphatic, and are less perfectly supported by resistant connective tissue than elsewhere.

A. NINIAN BRUCE.

**PATHOLOGY OF MYATONIA CONGENITA (Oppenheim).** AUGUST (580) STRAUCH, *Amer. Journ. Child. Dis.*, 1915, x., July, p. 16 (4 figs.).

A BABY suffering from this disease died suddenly, and permission was obtained to remove a large piece of the calf musculature and of the peroneal and popliteal (tibial) nerves of the right leg, two hours after death.

Sections showed marked muscular atrophy. The muscular fibres were small, and separated from each other by a large amount of areolar fatty tissue. About one-third to one-half of

the entire original muscle tissue was composed of areolar tissue. The striation was very indistinct and the sarcolemma nuclei were markedly increased. No hypertrophic fibres were present. The development of the muscle appeared to be retarded, presenting a prenatal stage, the not developed fibres being replaced by areolar tissue.

The nerves showed thinning of the myelin sheath in places, with increase in size of the nodes of Ranvier. The neurilemma nuclei were not much increased, but the connective tissue in the nerve was much more abundant.

The atrophy and decreased number of the muscle fibres explain the paralysis, and the intense proliferation of the connective and fatty tissue make the muscle appear of normal volume.

A brief review of other recorded muscle and nerve findings is given, and the author recommends careful examination of the organs of internal secretion at future autopsies.

A. NINIAN BRUCE.

#### **NORMAL-LOOKING BRAINS IN PSYCHOPATHIC SUBJECTS.**

(581) E. E. SOUTHARD and M. M. CANOVAN, *Journ. Nerv. and Ment. Dis.*, 1914, xli, Dec., p. 775.

In this paper the result of the examination of the material at the Westborough State Hospital is contrasted with the material at the Worcester and Danvers State Hospitals. The Worcester proportion of normal-looking brains in a series of psychopathic subjects was about one in three, the Danvers proportion about one in four, the Westborough proportion proves to be one in seven.

It is hoped that by scrutinising the list of the normal-looking brain cases that some true examples of the functional psychoses may be caught, which later, by microscopical examination, will shed more light on the functional psychoses.

D. K. HENDERSON.

### **CLINICAL NEUROLOGY.**

**THE VALUE OF THE STUDY OF THE REFLEXES IN THE DIAGNOSIS OF NERVOUS DISEASES, WITH ESPECIAL REFERENCE TO THE ALTERATION AND ABSENCE OF THE UMBILICAL REFLEX IN THE DIAGNOSIS OF TYPHOID FEVER.** H. C. GORDINIER, *Albany Med. Annals*, 1915, xxxvi., p. 432.

(GORDINIER states that his interest in the abdominal reflex dates from the appearance of the abstractor's article in *Brain* in 1906 (*v. Review*, 1906, iv., p. 532). His paper is based on the study of

111 cases admitted to hospital during the last eight years as cases of typhoid fever. Of these, 4 proved to be influenza, 3 infective endocarditis, 4 pneumonia, 1 pericarditis, and 1 acute miliary tuberculosis. In only one of these cases was there the slightest alteration in the umbilical reflex. The remaining 99 were true cases of typhoid fever, and in 86 there was definite alteration of the umbilical reflex. The supra-umbilical reflex was but little altered, being present in most of the cases. In 60 cases which were admitted during the second or third week of the fever the reflex was absent on both sides. In 39 cases which were admitted during the onset of the disease it was found that the reflex was normal or slightly exaggerated at first, but that at the end of the first or beginning of the second week it presented a characteristic change, being diminished first on the right and then on the left, and in a day or two disappearing first on the right and then on the left. The reflexes remained absent until the temperature had been normal for some days, and then reappeared first on the right and then on the left. Gordinier has never seen the infra-umbilical reflex absent in other febrile diseases, such as scarlet fever, measles, or lobar pneumonia, unless the abdominal cavity or peritoneum was directly affected. In 3 cases of paratyphoid fever it was absent on both sides until convalescence was complete. He has found it absent on one or both sides in 6 cases of pelvic peritonitis due to tubal disease, in 3 cases of suppurative peritonitis due to a perforated appendix, and 1 of general peritonitis from ruptured gall-bladder, and in 1 case of perforation of a duodenal ulcer. In 13 cases of acute appendicitis without rupture it was absent only on the right side, reappearing after operation. In 2 cases of cirrhosis of the liver with moderate ascites it was present, as well as in several cases of intra-abdominal tumours.

Like the abstracter, Gordinier found no constancy between the condition of the infra-umbilical reflex and that of the deep reflexes. He regards the loss of the reflex as due to a peripheral block, the result of intra-muscular nerve degeneration similar to the degenerative changes so commonly observed in the abdominal muscles from the typhoidal toxins.

J. D. ROLLESTON.

**PHYSIO-PATHOLOGICAL STUDY OF ANKLE CLONUS BY EIN-**  
 (583) **THOVEN'S GALVANOMETER.** (*Studio fisiopatologico del clono del piede per mezzo del galvanometro di Einthoven.*)  
 A. BERTOLINI and C. PASTINE, *Riv. di Patol. nerv. e ment.*, 1915, xx., p. 44.

THE writers examined thirty-three cases of ankle clonus, making several tracings in each, or seventy in all. The diseases in question were organic hemiplegias, various paraplegias or para-

pareses, infectious diseases in the stage of defervescence, and pulmonary tuberculosis with exaggerated reflexes.

Their conclusions were as follows:—To every clonic contraction there corresponded a single nervous impulse, and therefore a single electrical wave of contraction followed by a pause, which doubtless represented the interval between two peripheral stimuli. There was no justification from the electro-muscular point of view for assimilating the phenomenon to voluntary or tetanic contractions, to each of which corresponded several nervous impulses, and therefore several waves of contraction. In opposition to the view held by Bornstein and Saenger, the writers held that ankle clonus was a reflex phenomenon resulting from a more or less long series of reflex acts. They also considered that several muscles took part in clonus.

J. D. ROLLESTON.

#### RECENT WORK ON NERVOUS AND MENTAL DISEASES.

(584) H. CAMPBELL THOMSON, *Practitioner*, 1915, xciv., March, p. 420.

REFERENCE is made to the work of Robert Jones on infantile paralysis, Russell on angiospasm of the cerebral vessels (*v. Review*, 1913, xi., p. 105) Allen on incision of the cord as an operative procedure for fracture dislocation of the spine (*v. Review*, 1914, xii., p. 310), and Elsberg on incision of the spinal cord for intra-medullary tumours.

A. NINIAN BRUCE.

#### A CASE OF A SECOND ATTACK OF INFANTILE SPINAL PARALYSIS. (Un caso de parálisis espinal infantil recidivada.)

F. SANZ, *El Siglo medico*, 1915, lxii., p. 530.

THE patient was a woman, aged 35, whose first attack occurred at the age of 1 year, when the left leg and foot became paralysed and atrophied, and the second attack at the age of 15, when the right leg and foot became similarly affected. Both attacks were characterised by rapid onset, acute course, and general symptoms of infection. At present there is complete loss of motor power in both legs and feet, with flaccidity and atrophy of the paralysed regions. The feet are fixed in a position of equino-varus, are extremely cyanotic, and show patches of ulceration. The knee jerks and plantar reflexes are absent. Sensation is normal. In seventeen years' neurological practice Sanz has never seen or heard of a similar case (but *v. Review*, 1910, viii., p. 758; and 1911, ix., p. 314.—J. D. R.).

J. D. ROLLESTON.

**REPORT AND REMARKS ON A SMALL EPIDEMIC OF POLIO-  
(586) MYELITIS OCCURRING IN THE NEIGHBOURHOOD OF  
DEDDINGTON, OXFORDSHIRE.** PAUL B. ROTH, *Proc. Roy.  
Soc. Med.*, 1913, vii., Dec. (Surg. Sect.), p. 47.

THIS epidemic occurred in August and September 1911 and consisted of six cases distributed in five small villages, widely scattered. Direct infection was impossible and the cases were affected in a circular manner, the only point the same in all of them being the proximity of stables. The author considers that the epidemic originated by infected *Stomoxys calcitrans* biting the first case in the cattle yard. This patient was then bitten by other stomoxys, which in turn became infected and were carried by horses or cattle to the other places.

The fact that the infective material in the laboratory is very resistant to cold and that the disease is most common in warm weather, although the epidemics stop as soon as the cooler weather comes, suggests that the infection is carried by some insect that is killed or disappears as soon as the summer ends. The disease can be transmitted from an infected monkey to a healthy monkey by the bites of the *Stomoxys calcitrans*. These flies are found in all countries where epidemics of poliomyelitis have been described, they inhabit stables and cowsheds and bite horses, cattle, and human beings. A similar disease to poliomyelitis occurs in the horse.

A. NINIAN BRUCE.

**ACUTE ASCENDING HÆMORRHAGIC MYELITIS.** BENJAMIN T.  
(587) BURLEY, *Journ. Amer. Med. Assoc.*, 1915, lxx., Oct. 23, p. 1448  
(6 figs.).

A GIRL, aged 20, previously healthy, developed slight numbness in her left foot, followed by some weakness. The following day the right foot became similarly affected, and the condition gradually crept up the body, involving the chest and left arm. Next day very severe pain was complained of down both legs, and she shortly afterwards became completely paralysed and anæsthetic below the neck. Control of the bladder and rectum was lost, but the patient remained conscious, and clear mentally. Speech was unaffected. The cerebro-spinal fluid was turbid, markedly blood-stained, and under slightly increased pressure. It was sterile, with a marked increase of polymorphs. Death resulted from respiratory paralysis.

An acute diffuse inflammation of the cord was found, characterised by extensive hæmorrhage, with perivascular lymphocytic infiltration, amœboid glia cells, and degeneration of the fibres in the cord and nerve roots. The nerve cells were well preserved, but the centres of the large hæmorrhagic foci showed commencing

necrosis. The cortex showed a mild meningeal lymphocytic reaction.

The author considers that this case occupies a unique position allied to, but not identical with, either myelitis or hæmatomyelia. Its clinical resemblance to acute ascending paralysis, either of the poliomyelitic or Landry's type, is striking, though closer analysis of symptoms and pathological findings points to the existence of three distinct types of acute ascending paralysis, namely, ascending hemorrhagic myelitis, Landry's paralysis, and poliomyelitis. Two tables are given comparing the differential diagnosis and pathology of these three conditions.

A. NINIAN BRUCE.

#### **OBSERVATIONS ON THE VOICE IN TABES—A VOICE SIGN.**

(588) WALTER B. SWIFT, *Amer. Journ. Insan.*, 1915, lxxii, p. 349.

THE author states: "There is a distinct voice sign in tabes—an ataxic speech, which consists of a slovenly, indistinct enunciation on the laryngological side that shows partially in the vowels, but predominantly in the consonants. On the sensory side there is a partial involvement of the sense of position that is entirely to blame for the ataxia and slovenliness."

D. K. HENDERSON.

#### **ON THE ASSOCIATION OF PERNICIOUS ANÆMIA WITH SUB-ACUTE COMBINED DEGENERATION OF THE SPINAL CORD.**

(589) BYROM BRAMWELL, *Edinburgh Med. Journ.*, 1915, xiv, April, p. 260 (6 figs.).

FIVE cases of subacute combined degeneration of the spinal cord are described. In all the associated anemia was pernicious anemia. In some cases the anemia precedes, in others coincides, and in still others follows the development of the subacute combined degeneration: in other words, the severity of the spinal symptoms do not depend on the severity of the anemia. Apparently four types may be found:—

1. The toxin acts on the blood, producing pernicious anemia without spinal symptoms. This is the commonest type.

2. The toxin acts entirely or chiefly on the spinal cord, producing subacute combined degeneration without anemia. This is rare.

3. The anemia precedes the development of spinal symptoms. This is the most frequent type of subacute combined degeneration.

4. The toxin acts both on the blood and on the spinal cord from the first, the result being typical pernicious anemia with subacute combined degeneration of the spinal cord.

The differential diagnosis of subacute combined paralysis and

disseminated sclerosis is then discussed. In both subacute combined sclerosis and the spinal form of disseminated sclerosis, ataxic-spastic or spastic paraplegia, with exaggeration of the deep reflexes and subjective sensory disturbances, are usually the most prominent spinal symptoms. But disseminated sclerosis is more frequent in females, and rarely develops after the age of 35; subacute combined degeneration is commonest in males, and rarely develops before 35. The former is a very chronic disease, and rarely associated with anæmia; the latter rarely lasts more than six years, and periods of remission are not common. The clinical symptoms and pathology are also different.

A. NINIAN BRUCE.

**A CASE OF NEURO-FIBROMATOSIS.** J. MALCOLM, *Med. Journ. of (590) Australia*, 1915, ii., p. 99. *Pathological Report.* O. LATHAM, *ibid.*, p. 101.

THE patient was a man, aged 30. There was no family history of the disease. He showed diffuse nerve thickening, congenital *café-au-lait* patches, and punctiform pigmentation. The following nerves could be palpated:—*Head*—(1) Both supra-orbital nerves. (2) Both great occipital nerves. (3) Both small occipital nerves. *Arms*—(1) Ulnar nerves. (2) Radial nerves. (3) Cutaneous branches of musculo-spiral and musculo-cutaneous. (4) Nerves surrounding brachial artery. (5) Cutaneous branches on dorsal surface of hands. *Trunk*—Branches of intercostals at various levels. *Legs*—(1) Long saphenous nerves. (2) External popliteal nerves and their branches. (3) Branches of anterior crural nerves. An interesting feature of the case was an almost complete paralysis of rapid onset, and of almost complete recovery. Leucocyte counts suggested the possibility of some acute infective process causing a neuritic condition, superimposed upon the neuro-fibromatosis. A biopsy showed that the lesion was a diffuse overgrowth of the endoneural connective tissue. The possibility of the condition being due to the *Bacillus lepræ* was excluded by bacteriological examination, as well as by the small amount of interference with cutaneous sensation, relative to the extensive nerve involvement.

J. D. ROLLESTON.

**A CASE OF MOLLUSCUM FIBROSUM (VON BECKLINGHAUSEN'S (591) DISEASE).** A. WILSON GILL, *Brit. Med. Journ.*, 1915, ii., p. 533.

THE patient was a man, aged 60, with no hereditary or familial history of the disease. A tumour had been present on the scalp at birth, and at 30 he had first noticed small lumps on the skin of the chest. A large tumour weighing 5½ lbs. was removed from the

right costal margin at the age of 32. Since that operation the tumours had increased rapidly in number and size. Most of the growths were present in the trunk, especially the chest and back, and the face and forehead. The limbs were comparatively free, but there were several tumours on the soles—an uncommon situation. The three varieties of pigmentation described by Rolleston and Macnaughtan (v. *Revue*, 1912, x., p. 1), were present, viz., punctiform pigment spots, *café-au-lait* patches, and the violet-blue spots representing the first stage of the molluscous tumours. The appearance of the tumours was preceded by intense itching. A biopsy was refused. The patient was poorly nourished, but was active mentally and physically. There was no history of "bilious attacks," nor any evidence of pulmonary tuberculosis.

J. D. ROLLESTON.

**LESIONS OF THE OCCIPITAL LOBE AND AFFECTION OF**  
(592) **VISION.** BYROM BRAMWELL, *Edinburgh Med. Journ.*, 1915, xiv., Sept., p. 165.

THE following four cases are reported:—

1. Four acute cerebral abscesses—two in the left occipital lobe, one in the right occipital lobe, one in the right motor area (upper part); marked constriction of the fields of vision, the fundi oculi being normal.

2. Mitral stenosis; sudden partial loss of consciousness, mental stupor, and mind-blindness for a fortnight; permanent right-sided homonymous hemianopsia. Diagnosis, embolism of left posterior cerebral artery, and softening of the left cuneus. Embolism of right middle cerebral artery two years later: death.

3. Sensory (visual) "Jacksonian" epilepsy—flashes of light to the right, followed by right-sided homonymous hemianopsia—due to a discharging lesion on the outer surface of the tip of the right occipital lobe.

4. Melanotic sarcoma of brain, &c., large sarcomatous mass involving the left cuneus and upper occipital convolution; sensory (visual) "Jacksonian" attacks—flashes of bright light, worse in the right eye.

A. NINIAN BRUCE.

**EXTENSIVE PURPUBIC ERUPTIONS IN EPIDEMIC MENIN-**  
(593) **GITIS.** EDWARD A. MORGAN, *Amer. Journ. Child. Dis.*, 1915, x., Oct., p. 266 (5 figs.).

SINCE epidemic meningitis was first described as "spotted fever" much criticism has been directed against the term, because the frequency of skin manifestations is too small to justify its use.



In the earlier history of the disease, skin eruptions seem to have been more frequent, possibly because other forms of the disease were not recognised.

Two cases in young children, one of which proved fatal, are described which showed very unusual skin lesions. Both cases appear to have been sporadic, and in both the specific organism was isolated from the blood, although not from the skin lesions. The character and distribution of the eruption in each case did not resemble that of the usual purpura hæmorrhagica, and, although differing in degree, were almost identical. Other meningeal signs, such as opisthotonos, &c., were not unusually marked and proved quite amenable to treatment. The first case, that of a boy aged 2 years, developed necrosis and sloughing in some of the larger patches with gangrene, *e.g.*, the entire tip of the nose became necrotic exposing the nasal bones, and resembling Raynaud's disease. General sepsis and convulsions preceded death. The pathological condition found at the autopsy was that of a recovered case of epidemic meningitis.

A. NINIAN BRUCE.

**CEREBRO-SPINAL MENINGITIS IN THE LYONS DISTRICT**  
(594) **DURING THE WINTER OF 1914-15.** (*La méningite cérébro-spinale dans la région lyonnaise (hiver 1914-1915).*) A. LETOUNOWSKA, *Thèses de Lyon*, 1914-15, No. 65.

THE thesis is based on the study of 170 cases, 28 of whom were children, and the rest adults, aged from 18 to 50. 161 were examples of meningococcus or parameningococcus meningitis, and 9 of meningitis due to various pyogenic micro-organisms. All of these 9 cases were rapidly fatal. In 4 cases of meningococcus meningitis death was due to secondary invasion of the meninges by pneumococci or streptococci. The mortality of the 161 meningococcus cases was 25·5 per cent., which was reduced to 15 per cent. on subtracting the cases in which death was not due to the meningococcus, or which came under treatment too late. The mortality in children was 32 per cent., and in adults from 20-25 per cent. Complications or sequelæ were very rare. The parameningococcus was found in 4 cases, 2 of which died, and 1 of which owed its recovery to anti-parameningococcus serum. Bacteriological investigations may provide prognostic data, inasmuch as the absence or rarity of meningococci in the first specimen of the spinal fluid and negative cultures only occurred in cases which recovered rapidly. On the other hand, the presence of very numerous meningococci at the onset and a rich growth in cultures were chiefly seen in the fatal and prolonged cases.

J. D. ROLLESTON.

**ON OTOGENIC MENINGITIS.** (Contribution à l'étude de la (595) *méningite otogène*.) P. JACQUES, *Rev. de laryng. d'otol. et de rhinol.*, 1915, ii., p. 233.

Otogenic meningitis was long regarded as a fatal complication, but the following two cases, as well as the two reported by Coulet (*c. Revue*, 1914, xii., p. 263), show that the condition is not hopeless.

*Case 1.*—A boy, aged 10, was operated on for scarlatinal mastoiditis. Two days after the operation paroxysmal headache of the Gradenigo type developed. Recovery took place after discharge of pus through the operation wound before lumbar puncture was performed.

*Case 2.*—A miner had his right labyrinth fractured, secondary infection took place, and generalised purulent meningitis developed. Examination of the cerebro-spinal fluid showed an encapsulated organism of the pneumococcus type and an undetermined bacillus; no meningococci nor tubercle bacilli. Recovery took place after drainage of the labyrinth and repeated lumbar punctures, followed by intrathecal injections of electrargol. J. D. ROLLESTON.

**A CASE OF SUBACUTE PURULENT OTITIS MEDIA, LABY- (596) RINTHITIS, AND PURULENT LEPTOMENINGITIS DUE TO A CAPSULATED STREPTOCOCCUS: SPONTANEOUS RECOVERY.** J. S. FRASER and J. L. OWEN, *Edinburgh Med. Journ.*, 1915, xv., Oct., p. 269.

A MAN, aged 32, had a mild attack of otitis media in January 1915. It recurred in February, and was accompanied by labyrinthine or intracranial irritation as shown by headache and vomiting. Otorrhœa commenced in March, at the end of which he became very ill with symptoms of purulent labyrinthitis, rapidly passing on to leptomeningitis. The stage of delirium followed by semi-coma only lasted for forty-eight hours, and recovery took place without operation. Films from the cerebro-spinal fluid gave no meningococci, but Gram-positive diplococci of the pneumococcus type. A. NINIAN BRUCE.

**A CASE OF BRONCHO-PNEUMONIA, PURULENT OTITIS MEDIA (597) AND INTERNA, AND LEPTOMENINGITIS: Post Mortem: Microscopic Examination of the Ear.** JOHN THOMSON and J. S. FRASER, *Edinburgh Med. Journ.*, 1915, xv., Oct., p. 265 (8 figs.).

THIS case, in a child aged 1 year and 8 months, of acute strepto-(pneumo-) coccal infection of the respiratory tract, middle and inner ear, and subarachnoid space, is of interest since it explains

the occurrence of complete deafness, which may occur as the result of pneumonia. The tympanic membrane showed no perforation or myringitis. One ear was examined and found to be the seat of purulent otitis media and interna, but it is likely that the other ear showed the same condition. Thus if the child had survived, complete bilateral deafness with consequent deaf-mutism would almost certainly have resulted. A. NINIAN BRUCE.

**TWO CASES WITH MULTIPLE INTRACRANIAL COMPLICATIONS OF CHRONIC SUPPURATIVE OTITIS MEDIA: RECOVERY AFTER OPERATION.** J. S. FRASER and W. R. LOGAN, *Edinburgh Med. Journ.*, 1915, xv., Nov., p. 350.

*Case I.*—Chronic middle ear suppuration with extensive cholesteatoma formation. Radical mastoid operation performed. Labyrinth suppuration followed, the tongue remaining moist and clean, and there were no rigors. Neumann's labyrinth operation was carried out, but the temperature rose, and a streptococcus was isolated from the blood. It was now evident that in spite of the normal condition of the tongue a blood infection was present, and a third operation was performed. The right sigmoid and anterior portion of the right lateral sinus were found to be thrombosed, and the right internal jugular vein was ligatured. Fever continued with suboccipital tenderness, and pus was later evacuated from the bulb itself and the peribulbar tissues. At the end of a month fever disappeared and recovery resulted.

*Case II.*—Chronic suppurative otitis media, with extradural perisinus abscess and purulent meningitis in a girl aged 13 years. Radical mastoid operation performed, but followed by septic thrombosis of the sigmoid sinus, jugular bulb, and upper part of the internal jugular vein. A second operation was followed by pyæmic abscess and gangrene of lung, with also symptoms pointing to a cerebellar abscess. The dura was opened, and an abscess discovered and drained. Recovery slowly took place.

A. NINIAN BRUCE.

**BRAIN ABSCESS SECONDARY TO FRONTAL SINUS SUPPURATION; DRAINAGE; RECOVERY.** DAN. MCKENZIE, *Proc. Roy. Soc. Med.*, 1914, viii., Dec. (Laryngol. Sect.), p. 10.

A MAN, aged 27, developed an abscess in the right upper orbital region, with high fever and delirium following long-standing purulent discharge from the nose. The symptoms disappeared on opening the abscess, but the fistula did not close. An X-ray now showed the sinus to be air-filled, but as a probe seemed to pass an unusually long way into it, it was opened and found to be small,

the probe having passed through a second fistulous opening in the posterior wall which led to a large abscess in the frontal lobe. About 6 dr. of foetid pus were evacuated, and recovery resulted.

A. NINIAN BRUCE

**HEMIPLEGIA IN SCARLET FEVER.** (*L'hémiplégie au cours de la* (600) *fièvre scarlatine.*) G. MAYER, *Thèses de Lyon*, 1913-14, No. 44.

MAYER has collected 70 cases, 29 of which he records in detail, including those of Rolleston (*v. Review*, 1908, vi., p. 530), Gouget and Pelissier (*ibid.*, 1909, vii., p. 545), Savy and Favre (*ibid.*, 1913, xi., p. 436), and the following personal case:—A woman, aged 27, on the seventeenth day of an ordinary attack of scarlet fever, developed complete left hemiplegia. Contractures of the limbs supervened. The husband had been treated for syphilis, but the patient's Wassermann reaction was negative, and no improvement followed treatment by neosalvarsan. Mayer regards the hemiplegia as probably of scarlatinal origin, and attributes it to arteritis of the right Sylvian artery.

J. D. ROLLESTON.

**INTERESTING CASE OF TRAUMATIC SUBDURAL HÆMOE-**  
(601) **RHAGE.** H. VINCENT O'SHEA, *Practitioner*, 1915, xcv., Oct., p. 573.

A WOMAN, aged 35, fell off a chair while intoxicated. Nothing was found wrong, and her friends put her to bed. Next day there was no improvement, but this was attributed to drink, and medical advice was not sent for until the following day. She was then semi-conscious, slightly cyanosed, with Cheyne-Stokes breathing, dilated pupils, weakness of the left side of the body, and twitchings of the face, neck, and upper limbs. She died next morning.

At the autopsy the dura mater on the right side was distended with blood of a dark blue colour extending as far down as the medulla oblongata. There was no fracture of the skull or laceration of the brain. The blood appeared to have come from a tear in the superior longitudinal sinus (*cf.* L. B. Rawling, p. 501).

A. NINIAN BRUCE.

**CLINICAL TYPES OF ADIPOSIS AND LIPOMATOSIS.** Report of  
(602) a case of adiposis dolorosa presenting unusual symptoms.  
GEORGE E. PRICE, *N. Y. Med. Journ.*, 1914, c., Aug. 22, p. 355 (4 figs).

ADIPOSIS and lipomatosis have been classified by Lyon as follows: (1) Adiposis dolorosa; (2) obesity; (3) nodular, circumscribed lipomatosis; (4) diffuse symmetrical lipomatosis; (5) neuropathic cedema, pseudocedema, and (6) adipositas cerebialis.

Adiposis dolorosa, or Dercum's disease, was first described by Dercum in 1888, and is characterised by the accumulation of fatty masses which are either spontaneously painful or on manipulation, and is accompanied by asthenia and psychic disturbances. The latter vary greatly, and no one mental system seems to be characteristic. Accessory symptoms are numerous, and include motor, trophic, vasomotor, and secretory manifestations. A case is described in a woman, aged 32, which had been under observation for five years.

A. NINIAN BRUCE.

**ON TUMOURS OF THE CORPUS CALLOSUM.** (Contributo allo (603) studio dei tumori del corpo calloso.) G. AYALA, *Riv. di patol. nerv. e ment.*, 1915, xx., p. 449.

AYALA reviews the literature and records the following personal cases:—A man, aged 37, was suddenly seized with an ictus without loss of consciousness, followed by left paresis on 29th December 1910. On 6th January 1911 he had another ictus, with loss of consciousness, followed by left hemiplegia and the onset of mental decay, which became rapidly and progressively worse.

On 9th February he showed left hemiplegia with contractures, right spastic paresis, increase of all the tendon reflexes, especially on the right, bilateral Babinski, and a normal fundus. Psychically there were apathy, stupor, obstinate mutism, and attacks of psycho-motor excitement. Death took place on 25th February, about two months after the onset. The necropsy showed a gliosarcoma of the middle and part of the posterior part of the corpus callosum, invading the centrum ovale of both cerebral hemispheres, especially the right.

Ayala concludes that in the present state of our knowledge it is premature to claim to localise *intra vitam* tumours in the genu, body, or splenium of the corpus callosum. It can only be assumed that when there are reasons for supposing the existence of a tumour of the corpus callosum, and there is left ideo-motor apraxia, the seat of the tumour is very probably the anterior segment of the corpus callosum (*v. Review*, 1915, xiii., p. 171).

J. D. ROLLESTON.

**A REPORT OF THREE CASES RESEMBLING PSEUDOSCLEROSIS (604) AND PROGRESSIVE LENTICULAR DEGENERATION.** W. B. CADWALADER, *Amer. Journ. Med. Sci.*, 1915, cl., Oct., p. 556.

THE three cases reported belonged to the same family.

*Case I.*—A man, 42 years, who when 32 years old noticed a shaking of his right arm which gradually became more

pronounced; he soon found that his legs were becoming stiff, and that his left hand had started to shake. On examination the palpebral fissures were decidedly widened. There was a slight, regular, continued, tremulous movement of the head on the trunk, but there was no evidence of contracture of the muscles of the neck. There was a marked tremor of both upper extremities, the trunk, and lower limbs. The lower limbs were spastic and tremulous. The tendon reflexes were equally exaggerated on both sides, but the plantar response was flexion on both sides. The liver dullness was not diminished. Mentally he was dull, irritable, and rather apathetic. There was no discoloration of the skin on any part of the body, and no pigmentation of the cornea.

*Case II.*—A woman, 38 years, who at the age of 34 years became tremulous, and her limbs became so stiff that she had great difficulty in getting about. The right side of her face showed a tendency to spasticity; there was a distinct regular tremor of the lower jaw, a slight tremor of the head, and indistinct speech. She also showed a marked tremor of both arms, a tremulousness and spasticity of the lower extremities, but no sign of Babinski and no ankle clonus. The liver dullness was not diminished. Her mentality is described as normal.

*Case III.*—A man, 34 years, who when 32 years old first began to feel shaky. This was at first noticeable only in his hands, but later his legs became tremulous, and stiff. On examination he showed essentially the same features as the two cases described above. Mentally he was irritable, sulky, and sullen.

In discussing the diagnosis of these cases the author believes that multiple sclerosis can be definitely ruled out owing to the absence of nystagmus, owing to the normal state of the eye-grounds, and of sensation.

From a general consideration of the whole subject the author believes that it is not at all unlikely that pseudosclerosis and progressive lenticular degeneration may be proved to be merely modifications of the one disease.

D. K. HENDERSON.

**HEMIANOPIA, OPTIC APHASIA AND ALEXIA FOLLOWING POST-  
(605) PARTUM HÆMORRHAGE.** C. BRACEY DALE, *Birmingham Med.  
Review*, 1915, lxxviii., Aug., p. 37.

A WOMAN, aged 36, after a somewhat rapid labour, collapsed two hours later with post-partum hæmorrhage and intense pain in the head. On the next day the following conditions were noted: right-sided hemianopia, normal pupil reactions, enlarged thyroid and mitral stenosis. Next day she had improved, and there

were also discovered slight defect of memory, pure word and letter blindness, object blindness in so far that the objects could be recognised but not named, and alexia, but no agraphia. The lesion was considered to be a thrombosis of the left posterior cerebral artery. The word-blindness disappeared, but not the hemianopia.

A. NINIAN BRUCE.

**A CASE OF RETRO-ANTEROGRADE AMNESIA FOLLOWING  
(606) GAS POISONING.** PHILIP COOMBS KNAPP, *Amer. Journ. Insan.*,  
1915, lxxii., p. 259.

THE case of a married woman, 43 years, who, in May 1910, made an attempt to commit suicide by inhaling gas. She is supposed to have been exposed to the fumes for a period of about four hours. The following day she regained consciousness completely, but did not realise where she was, or recognise her attendants. The striking feature of her condition was amnesia. This was characterised not only by a loss of previously acquired memories, but by an almost total inability, at first, to acquire new memories. An examination in May 1915 showed that little change had taken place in her condition. The patient apparently has a complete amnesia for everything that happened during the three or four years that preceded the suicidal attempt. In addition to this period of total amnesia there is a very considerable failure of memory for events occurring during her girlhood and young womanhood, and she has a marked defect of her power of retention of recent impressions.

D. K. HENDERSON.

**A CONTRIBUTION TO THE STUDY OF BITEMPORAL HEMIAN-  
(607) OPSIA WITH NEW INSTRUMENTS AND METHODS FOR  
DETECTING SLIGHT CHANGES.** CLIFFORD B. WALKER,  
*Archives of Ophthalmol.*, 1915, xliv., July, p. 369.

ALTHOUGH considerable progress has been made of recent years, our knowledge of bitemporal hemianopsia has remained somewhat meagre and indefinite, not because its characteristic features have not been observed, but because they have been recorded by a number of different workers, each dealing with a more or less limited material, and practising individual and frequently inadequate methods of perimetry.

Walker has used the only method of perimetry capable of elucidating the real nature of chiasmal hemianopsia, the quantitative method, which is an extension of Bjerrum's method, and with the advantage of Cushing's large material has verified and extended

the work of previous observers and has firmly established our present knowledge of this interesting condition.

In the present paper the development of the changes in the fields of vision is traced from its early beginnings up to its final termination in complete or nearly complete blindness, and its progressive nature, as distinguished from the more or less fixed character of the defect in most cases of posterior or cortical hemianopsia, is clearly shown. The characteristic features of the fields are illustrated by a large number of charts from actual cases, and in a diagrammatic scheme eight stages between the normal condition and blindness are shown, and at the same time the amount of recovery which may be expected after operation at any given stage.

The field defect begins in the upper outer quadrant by a flattening of its periphery, often associated with a scotoma in the apex of the quadrant near the fixation point. This quadrant is gradually lost and then the lower temporal quadrant is affected, usually from above downwards and more markedly towards the centre than at the periphery, so as to leave a more or less hook-shaped area projecting from the lower nasal out into the lower temporal field; this area in turn disappears, often leaving an island of vision in the middle of the blind field, the temporal island, and finally the nasal field alone remains, gradually becoming smaller, until at Stage VIII. blindness is reached. In another part of the paper reference is made to very early changes, such as can only be detected by the use of very small visual angles when testing the fields. The interesting point as to what part of the field is usually the last to go is not referred to directly by the author, although in his scheme it is shown almost entirely in the upper inner quadrant, whereas Cushing, in a recent paper to which Walker's paper is the ophthalmological complement, states that the last areas of vision are as a rule in the lower nasal quadrants. An unusually symmetrical example of the former type of termination is figured amongst the illustrations.

The temporal island was found very consistently about  $50^{\circ}$  from the fixation point on or just below the horizontal meridian, though why this part of the temporal field should remain so long unaffected remains unexplained. For the scotoma, which lies between the fixation point and the blind spot, the author prefers the term "cæco-central" to the originally suggested "centro-cæcal," as he thinks the latter may lead to confusion with other uses of "cæcal." The relation of the scotoma to the vertical meridian of the field is indicated and its extension upwards, downwards, and outwards is described, but no mention is made of variations in intensity in its different parts. In regard to the cause of the scotoma the author supports the view of Fuchs and



others that a local toxic influence resulting from the growth of the tumour is probably concerned.

When the defects are strongly or predominately developed in the lower field the explanation is offered that the tumour may be overlapping the chiasma behind and thus exercising pressure on it above, or that in some way the arrangement of the crossed fibres may be the cause. In connection with these problems it is well to bear in mind that similar field changes can be produced by nasal sinus disease, so that it would appear unnecessary to invoke pressure from above to explain defects in the lower fields, and also that such defects are by no means specially common in suprasellar or interpeduncular tumours.

A considerable portion of the paper is devoted to the method of examination used. Although described in the title as new, and stated to have been devised by the author, its source is evident from the first paragraph of the paper, in which the statement is emphasised in italics that "*. . . a field examination with only one size of disc is just as incomplete as a visual examination with only one size of letter.*" This sentence is a literal, though unacknowledged, translation from a paper of Rönne's, who, with others, developed the method originated by Bjerrum into what may be called the "quantitative method" which, though not hitherto as widely used as it might be, is by no means unfamiliar to perimetrists, and is the procedure used by Walker to such advantage in the present instance. The field is examined with test objects of graduated sizes, the areas of most acute perception being demarcated by the smaller objects and those where vision is weak by the larger objects, so that the completely charted field shows a series of boundaries or isopters arranged similarly to the contour lines on a map. In this way the examination of the field of vision is brought into line with the examination of central vision by a test card with graduated letters. A commonly used test object is one 5 mm. in diameter, and on this account this size is said to have "become known as the *normal disc*," though such a use of the term "normal" seems arbitrary, as it has no reference to normal vision or the normal field, and it is certainly unfamiliar in European literature.

The 5 mm. or "normal" disc is taken as a standard, and the advantages to be derived from examining the areas of the field which show no response to the standard with larger objects, and likewise from analysing the areas responding to the standard with smaller objects, are discussed, and the point is emphasised that the presence or absence of response to large objects in an area which is blind to the "normal" disc, in other words, evidence as to whether vision is only reduced or completely abrogated, is of great value in regard to prognosis, especially in connection with surgical

interference, as a better outlook exists in most cases where there is some response to large objects in the defective parts of the fields.

The author's perimeter shows a further extension of the widening of the arc, introduced by Priestly Smith in his latest model, having a central circular area extending to  $35^\circ$  all round the fixation point while the arc extends to  $95^\circ$ , its width corresponding to about  $30^\circ$  at the outer end, and  $60^\circ$  where it joins the central portion. This structure is formed of thin brass plate moulded to a radius of 286 mm., the curvature being lateral as well as meridional, so as to form a portion of a hollow hemisphere. There is an arrangement for eccentric fixation, and it is noteworthy that mechanical arrangements for recording the fields have been excluded.

In order to avoid the necessity of using Bjerrum's screen, which is considered too time-consuming and laborious, the small visual angles required for delicate testing are obtained by reducing the size of the object rather than by increasing the distance from the eye. The test objects found most useful are circular discs from 0.15 mm. up to 40.0 mm. in diameter, each disc being twice the breadth of the one next in series below. The author is certainly to be congratulated on having designed a perimeter which appears to be as near an approach to the ideal as is practicable, and also on having been able to make and use successfully an object as small as 0.15 mm. The facility gained by the use of such a wide arc must be very great, and it is not difficult to accept the author's statement that an entire field may often be taken with only four settings of the perimeter. The important advantage of the large projection of the field afforded by the screen is, however, lost, and for this reason Bjerrum's method will still retain its advocates as regards the minute examination of scotomata, and of the field within the  $30^\circ$  circle. For recording observations a large chart is preferred, such as was designed by Sinclair some years ago.

In conclusion, it is stated that a large range of visual angles should be employed in examining the field of vision, and that both defective and apparently normal areas should be investigated with large and with small test objects respectively to ascertain the true conditions present. The prognosis is improved by the presence of temporal islands, and by response to large discs in the defective field. The caeco-central region is the weakest part of the field, and defects usually extend vertically through this area generally more marked from above. Toxic as well as pressure effects may be concerned in the production of the scotoma.

Dealing with a large material, carefully investigated, the author has confirmed and amplified our present information on

the subject, and his effectual demonstration of the superiority of a rational method of perimetry may be hoped to lead to its wider adoption.

This paper should be taken together with the next on the same subject, written in collaboration with Cushing. The two form the most important contribution to our knowledge of bitemporal hemianopsia up to the present time, and should be read by all who are interested in the symptomatology of lesions of or near the pituitary body and optic chiasma.

H. M. TRAQUAIR.

# **DISTORTIONS OF THE VISUAL FIELDS IN CASES OF BRAIN**

(608) **TUMOUR (Fourth Paper). Chiasmal Lesions, with especial reference to Bitemporal Hemianopsia.** HARVEY CUSHING and CLIFFORD B. WALKER, *Brain*, 1915, xxxvii., March, p. 341.

THIS is the fourth of a series of papers on the changes in the fields of vision found in connection with brain tumour, and deals with the incidence and nature of bitemporal hemianopsia due to this cause.

In 454 cases of brain tumour, lesions of or near the hypophysis occurred in 101, of which 81 had disturbance of the visual fields. The remaining 20, although classed as intracranial tumours on account of neighbourhood pressure symptoms, up to the time of writing showed no changes in the fields. Including cases of hypophysial disease, in which neighbourhood pressure symptoms were absent, only about 55 per cent. of the whole number showed field changes. Thus nearly half of all cases of hypophysial disease, as well as 20 per cent. of cases with definite neighbourhood symptoms, were found to have normal fields, a condition of affairs which indicates—as was found post mortem—that the chiasma may undergo considerable distortion without the production of demonstrable alterations in the visual fields. Alterations in these figures may, however, be expected on account of earlier diagnosis based on constitutional disturbances rather than on neighbourhood symptoms.

The changes in the fields produced by interference with the chiasma may be of the nature of homonymous as well as bitemporal hemianopsia, and in the latter case the typical form, with blind temporal separated from seeing nasal fields by a vertical meridian, is by no means the most usual. Thus, while a definite bitemporal hemianopsia indicates chiasmal interference, the converse does not hold true.

Grouping the cases according to the conditions present at the time of the patients' admission to hospital, there were found:—

1. Bitemporal hemianopsia (26). 2. Homonymous hemianopsia

(12). 3. Blindness in one or both eyes (35). 4. Irregular defects (8). In the present paper groups 1 and 3 are considered, the rarer homonymous cases being reserved for another occasion.

A short historical account of the incidence of bitemporal hemianopsia is given, illustrating the advance in the diagnosis of its hypophysial origin, while the author's figures, which refer only to hemianopsias due to tumours, give about 30 per cent. of the bitemporal form, a proportion considerably higher than would have been the case had all hemianopsias been included.

The mode of production and its relation to the anatomical arrangement of the optic fasciculi are illustrated by diagrams after Henschen, and the question of variations in the degree of crossing of the chiasmal fibres is shortly discussed, though in view of the importance of the anatomy of the chiasma in connection with bilateral visual field defects, this part of the subject is dealt with in a rather unsatisfying manner, and hardly up to the level of the rest of the paper.

The so-called types of bitemporal hemianopsia have been recognised by the authors as steps in a progressive process, which is illustrated by a diagram showing eight stages between a slight defect and complete blindness.

In the first stage the upper outer boundary of the field for white is somewhat constricted or "slanted off," while colour testing shows a defect roughly corresponding to the superior temporal quadrant, towards the apex of which there is often a paracentral scotoma. These conditions are usually associated with normal vision, though the patient may complain of a slight haze.

Stage II. shows an increase in the defect in the upper outer quadrant, with loss for colour now appearing in the lower outer quadrant. The scotoma persists and central vision begins to fail.

Stage III. shows temporal hemiachromatopsia for all but large objects, while the field for white has now completely lost its upper outer quadrant and the upper part of the lower outer quadrant, the remains of which extend from the lower nasal quadrant as a "gourd-shaped" projection curving outwards and upwards. A relative central scotoma is present, central vision falls farther, and the hemiopic pupillary reaction becomes demonstrable.

In stage IV. there is complete hemianopsia with sparing of macula, together with increase in size and intensity of the relative central scotoma.

In stage V. the remaining nasal half field shows constriction, usually commencing below, while the relative central scotoma becomes absolute, only excentric vision remaining.

Stage VI. shows further shrinkage, and at stage VII. all that remains is a small area with merely the remnants of visual

function situated in—according to the diagram—the upper part of the lower nasal quadrant.

Finally, in stage VIII. there is total blindness.

The process advances at varying rates, unequally in the two eyes, with periods of actual retrogression, though with a general progressive tendency. Even when the fields have actually increased a central scotoma may remain. Fisher's view that traction rather than pressure causes the functional change is mentioned, and the authors believe that these two causes act together, a view supported by their post-mortem studies, in which the tracts were frequently found to have been "thinned out into mere ribbons," while the chiasma had suffered much less.

The upper fields were found to suffer more than the lower, and in several cases the terminal patch of vision was found in the lower nasal fields. The macular fibres may be severely affected, causing a relative central scotoma which may remain for a long time after recovery of the peripheral field.

Examples are given of nine intrasellar and five suprasellar tumours, with many charts, showing the progressive field changes and the results of operation on the hypophysis.

One case in which both upper inner quadrants remained, owing to the dorsal uncrossed bundle having become affected before the ventral, is classed as a "Bizarre type," and is assumed to be due to the envelopment of the chiasma by a growth spreading upwards. There are objections to this view, the chief being that suprasellar tumours which may be supposed to press upon the dorsum of the chiasma from the beginning are, as the authors themselves state, by no means prone to produce defects commencing in the lower field, which, as a matter of fact, were found by the authors in connection with large primarily intrasellar growths. The observations of other workers also have shown that termination in the upper inner quadrants is by no means a rarity, and that it may be suggested, if not definitely produced, in nasal sinus disease where there is no reason to suppose that the uncrossed bundles are being affected by pressure from above.

The suprasellar tumours occur characteristically in the interpeduncular space, and produce field defects in many cases following the typical stages, while they are necessarily less amenable to surgical interference.

Charts from three cases are given in which the most noteworthy feature is the retention of central vision in two, the defect tending towards the type of ring scotoma. No comment is made upon this feature, which is not a little difficult to understand, if it is assumed that the macular fibres cross in the upper posterior part of the chiasma, where they might be supposed to be easily affected by a tumour of the infundibulum,

nor is any light thrown upon the problem in the paragraphs dealing with the course of the macular fibres.

The characteristic absence of swelling of the nerve head was found in nearly all their cases, and attributed to blockage of the sheath of Schwalbe, though in a few cases slight œdema with new tissue formation became superimposed upon a primary atrophy, presumably on account of extremely high intracranial pressure in the presence of unobstructed nerve sheaths.

The question as to how far pallor of the optic discs indicates atrophy is discussed, and it is pointed out that it is often impossible to tell from the appearance of the discs whether actual destruction of the nerve fibres has occurred. A possible hypophysial source should always be excluded, "in view of the far greater frequency of this appearance from a mechanical pressure against the nerves and chiasm," before attributing apparent atrophy of the nerve head to any of the various forms of toxic amblyopia.

As has already been stated by Cushing, the visual defects are due rather to a physiological blockage than to anatomical destruction of the nerve fibres, a view supported by the great capacity for recovery, and by the fact that in several cases only a few degenerated fibres were found in nerves, which had previously clinically shown the appearance of advanced atrophy, as well as advanced defects in the fields. Nor could any correspondence be found between defined field defects and cross sections of the nerves, such as might have been expected in accordance with Henschen's diagrams.

Some four pages are devoted to a description by Dr Walker of the mode of perimetric examination. The distinction between the field defects produced by posterior and by anterior intracranial lesions of the visual tract is pointed out, and the advantage of using a series of test objects in the examination of the latter is emphasised. This part of the subject is more fully discussed in a paper by Walker, an abstract of which will be found on another page (p. 555). The method used is the usual procedure of testing with serial test objects of graduated sizes, with a few minute differences in detail, and presents nothing to warrant the rather belated claim, on the part of the author, to its discovery.

In conclusion, perimetry with small serial objects is recommended for the detection of stages of hemianopsia earlier than those usually recognised. This paper definitely establishes present-day views of the nature of bitemporal hemianopsia, and marks a definite step in the investigation of lesions in the neighbourhood of the optic chiasma. A rather limited bibliography is appended.

H. M. TRAQUAIR.

**AN ANALYSIS OF SIXTEEN CASES OF CHOREA AND MOTOR**

(609) **TIC.** J. E. MIDDLEMISS, *Edin. Med. Journ.*, 1915, xv., Nov., p. 333.

THIS paper consists of a detailed account of sixteen cases of chorea and motor tic occurring chiefly in aments or in the families of aments. The term chorea here embraces both the acute type of Sydenham and the chronic variety, and reasons are advanced for considering the various motor disorders together. The clinical relationship between these affections and rheumatism, tuberculosis, epilepsy, and other neuropathic conditions is illustrated by individual and family histories and genealogical tables. Rheumatism is found comparatively rarely as a concomitant factor; epilepsy, tuberculosis, and neuropathic states in general, in a large proportion of the cases, account being taken of the type of material dealt with. The conjunction of neuroses or a neuropathic family history is particularly emphasised, and corroboration is given to the view which assigns to an underlying neurotic basis the essential etiological rôle in these affections. At the same time a distinction is made between the acute and chronic types of chorea, the latter being shown to be dependent upon definite organic lesions of the nervous system. The majority of the chronic cases occur in conjunction with secondary amentia, and in character and in distribution clearly evidence their traumatic origin. The few in which the defect is obviously primary are of such low mental status as to suggest a very rudimentary development of the cortical neurones.

AUTHOR'S ABSTRACT.

**PRACTICAL APPLICATION OF THE LUTIN TEST.** HIDEYO

(610) NOGUCHI, *N.Y. Med. Journ.*, 1914, c., Aug. 22, p. 349.

THE following statistics of the practical value of the luetin reaction are based upon the observations of about fifty investigators:—

*Primary Syphilis.*—The reaction is present in less than 30 per cent. of cases, and is usually mild.

*Secondary Syphilis.*—Reaction reported positive in 47 per cent. of 630 cases, and is usually mild.

*Tertiary Syphilis.*—Reaction positive in about 80 per cent. of cases, and is usually very severe (pustular form).

*Congenital Syphilis.*—Reaction positive in about 70 per cent. of cases, and more distinct after energetic treatment.

*Syphilis of the Nervous System.*—Reaction less frequently present in acute syphilitic meningitis than in the parenchymatous affections, such as general paralysis and tabes, where it has been reported positive in about 60 per cent. of cases.

*Visceral Syphilis*.—Reaction positive in nearly 90 per cent. of cases, especially in cases of aortic insufficiency.

The luetin reaction does not always run parallel with the Wassermann reaction. The luetin reaction indicates the allergy, and the Wassermann reaction the presence of an active syphilitic process.

A. NINIAN BRUCE.

**THE EFFECTS OF IRRITATION ON THE PERMEABILITY OF (611) THE MENINGES FOR SALVARSAN.** EDGAR STILLMAN and HOMER F. SWIFT, *Journ. Exp. Med.*, 1915, xxii., Sept., p. 286.

"THE subdural injection of normal salt solution, normal serum, serum salvarsanized *in vivo* or weak solutions of cyanide of mercury does not demonstrably increase the permeability of the spinal cord or brain for salvarsan which is circulating in the blood at the time of the subdural injection."

A. NINIAN BRUCE.

**THREE ATTACKS OF SYPHILIS.** (*Syfilisinfektion tre ganger*.) (612) R. KREFTING, *Norsk Mag. f. Læger.*, 1915, lxxvi., p. 1223.

A MAN, aged 26, developed a hard chancre of the penis for the first time in the summer of 1913, the second time in March 1914, and the third time in March 1915. The characteristic spirochaetes were found in the lesions on each occasion. He was treated with injections of salvarsan after the first two infections, and it was only after the last infection that his Wassermann's reaction was positive. The chancre had then been present for about seven weeks before he came under treatment. No secondary symptoms were noted in any of the attacks.

J. D. ROLLESTON.

**SYPHILIS AND RAYNAUD'S DISEASE.** HANS LISSER, *Archives of* (613) *Int. Med.*, 1915, xvi., Oct., p. 509 (1 coloured plate).

A COLOURED girl, aged 7, suffered from symmetrical gangrene of the feet and four unquestioned attacks of asphyxia of the fingers, without exposure to unusual cold. A transient glycosuria was present with gonorrhoeal vaginitis and probable arthritis, and congenital syphilis. The patient thus apparently suffered from three distinct diseases.

The theories of the pathogenesis of Raynaud's disease are briefly :—



1. Raynaud's theory that it is due to a central vasomotor neurosis due to direct or reflex stimuli on the vasomotor centre.

2. Pitres and Noesske, &c., attribute it to a peripheral neuritis.

3. Disease of the peripheral arteries.

4. Syphilis.

5. Disease of nerves leading from unknown trophic centre (Hochenegg, Fuchs).

6. Spinal cord origin comparable to syringomyelia.

7. Internal secreting glands, especially thyroid.

Raynaud's symptom complex has been observed as a complication of about fifty different diseases, and is probably a clinical entity. About 10 per cent. of cases occur in syphilitic cases, and about the same in tuberculosis.

The syphilitic origin of the condition has been explained as the result of a direct syphilitic lesion of the blood vessels or their nerve supply, or as the indirect action of a syphilitic toxin; or, that syphilis may so lower the bodily resistance as indirectly to make the individual more susceptible to Raynaud's disease. Such views still lack proof.

A. NINIAN BRUCE.

**RAYNAUD'S DISEASE.** (Report of a case of symmetrical gangrene (614) of unusual severity.) ARCHIBALD L. HOYNE, *Journ. Amer. Med. Assoc.*, 1915, lxx., Nov. 13, p. 1725 (1 fig.).

A BOY, aged 5, was admitted to hospital for scarlet fever of three days' duration, and while there developed measles eight days later. Six days after this a swelling in the right parotid was observed, and it was believed the patient had mumps. He next showed an eruption of varicella, and two days later whooping cough was added to the list. Seven days after this a bluish-black line appeared on the dorsum of each foot. This was at first thought to be purpuric, but rapidly spread until an acute symmetrical dry gangrene of both lower extremities, both upper extremities and cheeks, with beginning sequestration developed. This was followed by thrombosis of the right femoral vein and pneumonia. At the autopsy acute hyperplasia of the peribronchial lymph glands, perilobar infiltration of the liver, fatty degeneration of the kidneys, general lymphadenoid hyperplasia, including glands, spleen, and Peyer's patches, the latter pigmented, were all found, but no definite findings throwing light on the etiology of the gangrene. A streptococcus was isolated from the thrombus.

A. NINIAN BRUCE.

**CLINICAL INVESTIGATION OF GASTRIC NEUROSES WITH**  
 (615) **VAGOEXCITATIVE CHARACTERISTICS.** SELIAN NEUHOF  
*N.Y. Med. Journ.*, 1914, c., Aug. 22, p. 365.

IN vagoexcitative gastric neuroses the complaints are real, not imaginary. The vagus nerves which control the normal gastric functions may become primarily hyperexcitative, and give rise to abnormal nerve tone; the resultant symptoms are often explained by a study of the reflex paths followed by the abnormal vagus impulses (*v. p.* 574). The study and symptomatology of such neuroses have several aspects:—

1. Symptoms primarily vagoexcitative may be the cause of so-called neurasthenia, and the latter may exist even after the gastric symptoms have disappeared.

2. Gastric vagoexcitation and "neurasthenia" may coexist and have no etiological connection.

3. Strong emotions—fright, excitement, &c.—may originate vagoexcitative phenomena which outlast the original cause.

4. Minute study of symptoms may lead to a rational etiology, diagnosis, and therapy.

5. For this type of gastric neuroses, we may discard the terms neurasthenia, hysteria, and nervous dyspepsia.

The symptomatology and treatment are discussed.

A. NINIAN BRUCE.

**FEMINISM FOLLOWING ORCHIDECTOMY.** W. YOUNG, *New Zealand*  
 (616) *Med. Journ.*, 1915, xiv., p. 180.

A MAN, aged 32, had had both his testes removed for chronic abscesses at the age of 12. His voice was masculine, but he was beardless, and his skin was smooth and soft. The body and limbs were well rounded and padded with fat. The breasts were well developed and there was a distinct waist. The hips were broad, and the abdomen was rounded and prominent below the umbilicus.

J. D. ROLLESTON.

**INCOMPLETE FORM OF GRAVES' DISEASE ASSOCIATED**  
 (617) **WITH "OPHTHALMOPLÉGIA PARTIALIS EXTERNA**  
**BILATERALIS."** (*Morbus Basedowii a forma frusta*  
*associato ad "ophtalmoplegia partialis externa bilateralis."*)  
 G. FUMAROLA, *Riv. di Patol. nerv. e ment.*, 1915, xx., p. 428.

MAN, aged 45. Of the four cardinal symptoms of Graves' disease, tachycardia, goitre, exophthalmus, and tremor, he presented only the last two. The exophthalmus was so predominant on the right side as to be almost unilateral. The tremor was ill-marked. Instead of tachycardia, there was a true bradycardia, the pulse

being 52 in the recumbent and 60 in the erect position. The thyroid was atrophied. The following accessory symptoms were present: hyperidrosis, diminution of the electrical resistance of the skin (Vigouroux's sign), a positive oculocardiac reflex shown by a diminution of 8 to 10 pulsations per minute after ocular compression (*v. Review*, 1914, xii., p. 254), and a modification of the blood formula shown by an increase in the red cells, with diminution of the hæmoglobin, leucopenia, especially of the polymorphonuclears, increase in the mononuclears, and slight hyperlymphocytosis. The writer attributes the ocular paralysis, which is exceptional in Graves' disease, to a toxi-infective process in the oculomotor nuclei.

J. D. ROLLESTON.

**CASE OF DYSIDROSIS AND DYSTROPHY OF NAILS IN A**  
(618) **PATIENT WITH GRAVES' DISEASE.** S. E. DORE, *Proc. Roy. Soc. Med.*, 1915, viii., July (Dermatol. Sect.), p. 268.

A WOMAN, aged 23, who suffered from Graves' disease for three years, showed intermittent attacks of typical cheiro-pompholyx and dystrophy of all the finger nails. These changes were present for one year only. It was doubtful if they were tropho-neurotic or independent of the disease.

A. NINIAN BRUCE.

**PANCREATIC INFANTILISM.** BYROM BRAMWELL, *Edinburgh Med. Journ.*, 1915, xiv., May, p. 323.

THE characters of pancreatic infantilism, which the author claims to be a distinct clinical entity, are: arrested bodily and arrested sexual development; intelligence good, no mental defect; no deformity or structural defect of the bones; no visceral disease or derangement except chronic diarrhoea, flatulent distension of the abdomen, and defective or arrested pancreatic secretion. The defective or arrested pancreatic secretion is probably due to chronic pancreatitis. In some cases the condition (chronic diarrhoea and infantilism) is completely cured by the administration of pancreatic extracts, and by that treatment alone.

The after-history of the author's case, which was cured, is here given, with reference to five other recorded cases from the literature.

Two other cases of infantilism associated with diarrhoea are also described, which were at first thought to be of pancreatic origin. As the defect appeared, however, to have been chiefly in the stomach, the term "gastro-intestinal" infantilism was considered appropriate for them.

A. NINIAN BRUCE.

## PSYCHIATRY.

**GENERAL PARESIS.** From the serologist's and therapist's point (620) of view. D. M. KAPLAN, *N. Y. Med. Journ.*, 1915, c., Aug. 29, p. 397.

SEROLOGICAL phenomena are composed of evidences of irritation, evidences of cord compression, of syphilis, and of general paresis.

The precipitation of colloidal gold may be regarded as a characteristic reaction in general paresis.

In judging the efficiency of therapy, not the pleocytosis but the Wassermann should be considered. A. NINIAN BRUCE.

**THE TREATMENT OF PARESIS AND TABES DORSALIS BY (621) SALVARSANIZED SERUM.** HENRY A. COTTON, *Amer. Journ. Insan.*, 1915, lxxii., Oct., p. 355.

THE first part of this paper was abstracted in this *Review* in September 1915, p. 460. In this second part the eleven cases which the author believes treatment has arrested are recorded in detail, and a more general account is given of the "much improved" cases. The case which is given pride of place, and on which most stress is laid, is that of a case of juvenile general paralysis occurring in a boy 17 years of age. Prior to treatment the case had been one of three years' duration, had been characterised by convulsive spells, by poor memory, by the expression of absurd ideas, and by general mental deterioration. The cell count was 40 per c. mm., the globulin reaction was negative, and Wassermann reaction was 4+ both with the blood and the cerebro-spinal fluid.

He was given sixteen Swift-Ellis treatments, and later six further treatments, using the Ogilvie modification. The result obtained is described as excellent; the patient is now at home assisting his father, but he is still under observation, and it is possible that further treatment will be necessary. The blood and cerebro-spinal fluid findings are now entirely negative, and the only (!) physical signs remaining are Argyll Robertson pupils and exaggerated knee jerks. (This article has to be continued.)

D. K. HENDERSON.

**THE ROLE OF THE SEXUAL COMPLEX IN DEMENTIA PRÆCOX.** (622) HASSALL, *Psychoanalytic Review*, 1915, July, p. 260.

SOME critics of the genetic dynamic conception of mental disorder have complained of the insufficient evidence on which these views are supposed to be based, and the aim of this paper is to add still

further to the mass of published facts substantiating the newer conceptions, facts which were arrived at independently of suggestion since the patients suffered from dementia præcox. No fresh conclusions are reached, but the prominent part played by various sexual complexes in this disease are illustrated in considerable detail.

ERNEST JONES.

**CLINICAL OBSERVATIONS ON PARANOIA AND PARAPHRENIA.** (623) **PHRENIA.** (*Einige klinische Beobachtungen bei der Paranoia und Paraphrenie.*) FERENCZI, *Internat. Zeitschr. f. ärztl. Psychoanalyse*, Jahrg. II., S. 11.

THREE cases are narrated and commented on. The paper is principally a study of system formation in these diseases, and illustrates the importance that such a system has in retaining the patient's mental stability. The system of delusions is not a part of the disease process, as is usually thought, but an attempt at self-healing, so that efforts made to break it down and "cure the patient of his delusions" are fraught with danger to his general mental health.

ERNEST JONES.

**THE PREDISPOSITION TO OBSESSIONAL NEUROSIS** (*Die Disposition zur Zwangneurose.*) FREUD, *Internat. Zeitschr. f. ärztl. Psychoanalyse*, Jahrg. I., S. 525.

DIVIDING the causes of neurosis in general into congenital and acquired, Freud holds that it is the former factors that decide which precise form of neurosis a given patient will suffer from. The psychical functions concerned, notably the sexual ones, have a long and complicated development to pass through before attaining their adult form. The stages where there is a difficulty in this otherwise smooth development are called fixation points, and these are different in the case of each neurosis. The dates of these fixation points correspond inversely with the time of life at which the neurosis becomes manifest: for instance, hysteria, obsessional neurosis, paraphrenia (dementia præcox), and paranoia become manifest in this order, whereas the times of the fixation points are in the reverse order, that of hysteria being the latest in development. Referring to Jones' work on the part played by sadism and anal-erotism in the obsessional neurosis, Freud agrees that this neurosis is essentially a reaction to these two "partial instincts." He points out, however, that there is a stage in the *normal* development of the child (between that of auto-erotism and that in which the primacy of the genital zone is established) characterised by the prominence of these two partial instincts,

and maintains that this is the fixation point of the obsessional neurosis. The stage in question is one of the pregenital stages of infancy, and he gives illustrations of other manifestations proceeding from the same period in the normal. ERNEST JONES.

**A STUDY IN SOCIAL MALADJUSTMENT.** H. P. MOYLE, *Amer. (625) Journ. Insan.*, 1915, lxxii., p. 275.

IN this article a very interesting analysis is given of the personality of a woman, 55 years, who in childhood had been pampered and protected, and who in later years seems to have had a very shallow, superficial existence. There were no definite psychotic features. The case was studied according to the "Guide to a Descriptive Study of the Personality," published by Hoch and Amsden in this *Review*, November 1913.

D. K. HENDERSON.

**SOME STUDIES IN THE PSYCHOPATHOLOGY OF ACUTE DIS-**  
(626) **SOCIATION OF THE PERSONALITY.** E. J. KEMPE, *Psycho-*  
*analytic Review*, 1915, Oct., p. 361.

A DETAILED study of a case of paraphrenic excitement in a married woman of 28 is presented, with an analysis of the more prominent symptoms. It is pointed out how these form a disguised outlet for various buried motives and emotions, mainly sexual. The descriptions are frequently couched in a neurological terminology that does not conduce to lucidity, *e.g.*, "motives express themselves through the use of adequately sensitised neurone systems," &c.

ERNEST JONES.

**REMARKS ON A CASE WITH GRISELDA PHANTASIES.** (Bemer-  
(627) **kungen über einen Krankheitsfall mit Griselda-Phantasien.)**  
J. J. PUTNAM, *Internat. Zeitschr. f. ärztl. Psychoanalyse*, Jahrg. I.,  
S. 205.

THE patient, a man of 55, complained of depression, especially in the early morning. He remarked on a peculiar estrangement that had gradually come about between him and his eighteen-year-old daughter, in spite of their mutual attachment. The tension between them increased, and the father began to blame her for neglecting him, &c. He indulged in various phantasies, in which he was angry with and punished her. The phantasies in question were an exact replica of those with which, in his childhood, he had indulged to an excessive extent (psychical masturbation) and which later preceded physical masturbation. So dependent on them was he that he had never been potent except when he deliberately

developed them. The former object (mother-image) had now, for various reasons, been replaced by the daughter. A detailed description of the case is given, together with the analysis of three dreams, and a general discussion of the significance of the character traits.

ERNEST JONES.

**INSTITUTIONAL STASIS.** H. C. EYMAN, *Amer. Journ. Insan.*, 1915, (628) lxxii., p. 331.

"OUR hospital (asylum), because of the necessary routine, is apt to become a 'sleepy land,' and sometimes it requires a severe jolt to shake us out of the ruts, awaken us into new life, infuse new vitality into our work, new hopes, new aspirations, and new power into the wheel which for years has been deepening the hollow tracks."

An indictment is entered against those assistant physicians "who are just able to hang on, who do their various duties punctually, may be, but in a perfunctory way, following lines of habit, content to be able to sign the pay-roll monthly, and to escape the actual condemnation of their superior officers." Medical officers in institutions are urged to enter into their work with interest and enthusiasm, to cultivate the habit of reading medical literature, and to join the local medical societies, so as to be kept in touch with general medical questions.

D. K. HENDERSON.

## Reviews

**DISEASES OF THE NERVOUS SYSTEM.** H. CAMPBELL THOMSON, (629) M.D., F.R.C.P. Second Edition, revised and enlarged. Pp. xvii+553, with 10 colour and 12 black and white plates, and 120 figures in the text. Cassell & Co., Ltd., London, New York, Toronto, and Melbourne, 1915. Price 10s. 6d. net.

THE second edition of this book has been called for after an interval of seven years. It has been most carefully brought up to date by the addition of some seventy pages. It has also been carefully revised throughout. The portion of the first edition which dealt with syphilis of the nervous system has been rewritten, so that tabes and general paralysis may fall into their proper places according to etiology, and new chapters have been added on the general functions of the brain, the examination of the higher functions of the nervous system and the application of experi-

mental psychology, the sympathetic system, and the paths of infection of the central nervous system. The section dealing with the general classification of neurones has been enlarged, and new plates and figures have been added. The general characteristic of the earlier edition has been otherwise maintained.

The author has all through exhibited a faculty of condensing his information in short and concise paragraphs which are readily understood and add very greatly to the value of the book. The descriptions and illustrations of the individual diseases are carefully and briefly described.

The book may be strongly recommended to anyone wishing a thoroughly up-to-date and concise textbook on nervous disease. All important recent work has been incorporated in it. It covers the ground most satisfactorily without reaching too great bulk. It is a convenient size, is not too heavy, and the type and printing are excellent.

**SYMPTOMATOLOGY, PSYCHOGNOSIS, AND DIAGNOSIS OF**  
(630) **PSYCHOPATHIC DISEASES.** By B. SIDIS. 1914. Pp. 448.  
R. G. Badger, Boston. Pr. \$2.50 net.

**THE FOUNDATIONS OF NORMAL AND ABNORMAL PSY-**  
(631) **CHOLOGY.** By B. SIDIS. 1914. Pp. 416. R. G. Badger, Boston.  
Pr. \$2.50 net.

BORIS SIDIS is well known in the medico-psychological world as having written, some twenty years ago, an interesting monograph on the "Psychology of Suggestion," since when he has published a number of articles calling attention, in a very exaggerated way, to the importance of a variety of hypnosis known as the hypnoidal state. In his capacity as Director of the Sidis Psychotherapeutic Institute he has had a considerable experience of this method of treatment, and in these two volumes, as also in one shortly to appear on "The Causation and Treatment of Psychopathic Diseases," he expounds his views on psychology in general, and psychopathology in particular.

Of the two books, that on psychology is the one less open to criticism. It comprises two parts—one on "fundamental concepts and principles," the other on "the theory of the moment consciousness." The former is chiefly taken up with epistemological problems, such as the ultimates, postulates of psychology as a science, and the relation of mind to body, and an account of subconscious dissociation. Sidis is not a believer in psychic determinism, writing, in fact, that "Not purpose, but chance is at the heart of mental life." He accepts William James's theory of a reservoir of unused reserve mental energy. The second part deals



especially with the organisation and development of the "moment consciousness." The book as a whole is distinctly worth reading, but it contains only a very imperfect account of the subject, because of the distorted perspective with which unimportant matters are put into the foreground and more important ones into the background.

The other volume, on psychopathic diseases, has three parts, the first on "subconscious states and borderland phenomena," the second on "psychopathic diseases," and the third on "psychognosis (a term by which the author means investigation of the mind) and diagnosis." The first part is almost entirely taken up with a discussion of the hypnoidal state, one in which the author is not likely to find any medical psychologist to agree with his conclusions. The whole book is written in terms very foreign to those of neurology and psychiatry. If, for example, we look up the chapter on "the classification of nervous and mental diseases," we find psychopathic states nosologically grouped into (1) peripheral (sensory, motor, and visceral disturbances); (2) periphero-central (illusions and hallucinations); and (3) central (mental troubles such as aboulias and fixed ideas). No discussion whatever is given of the distinction between typical disease processes, such as hysteria, neurasthenia, &c., and it is plain that the classification is nothing but a symptomatological one. An atmosphere of dogmatism and exaggeration pervades both books, which may be illustrated by the following two examples, out of numerous similar ones. "More than one-half of the patients that come to the general practitioner are cases of psychopathic disorders." Yet on the same page we are told that "to one case of insanity there are thousands of cases of functional neurosis and psychopathic affections which have absolutely nothing to do with insanity," which, if taken literally, would mean that the number of such cases in a given country is actually far greater than that of the total population, much more than the modest half of a general practitioner's clientèle.

Sidis devotes twelve pages of his introduction to making a savage assault on the investigators of the psycho-analytical school. He imputes to them almost unprintably disreputable motives, and employs scurrilous vituperation of a kind rarely to be found within the covers of a book purporting to be a scientific treatise. The passionate violence of his language, and the complete lack of critical balance displayed, will go far to discredit the value of his work in a science, psychology, that above all others demands some capacity at least for objectivity.

ERNEST JONES.

**VAGOTONIA. A clinical study in vegetative neurology.** Dr HANS (632) EPPINGER and Dr LEO HESS, of Vienna. Authorised translation by Drs Walter Max Kraus, A.M., M.D., and Smith Ely Jelliffe, M.D., Ph.D. Nervous and Mental Disease Monograph Series, No. 20. New York, 1915. Pr. \$1.00.

"VEGETATIVE" neurology, *i.e.*, the neurology of the visceral organs, is a new department of nervous disease. The main reason for this is that it is only a comparatively few years ago that, from the researches of Langley and others, we have obtained any reliable understanding of the anatomy and physiology of the sympathetic nervous system itself. The pathology of this system scarcely exists, and the present monograph on "vagotonia" represents the beginning of an attempt to place its clinical manifestations upon a definite basis.

The authors accept the division of the *vegetative* nervous system into two portions. The first arises from the thoracic and upper lumbar segments of the spinal cord and forms the *sympathetic* nervous system proper. The second arises from the mid-brain, medulla oblongata, and sacral region of the cord and forms the *autonomic* nervous system. The vegetative nervous system supplies cardiac muscle, non-striated muscle and glandular tissue. Each organ receives a double supply, one from the sympathetic and the other from the autonomic system. These two systems are antagonistic in their actions. The largest and most important nerve connected with the autonomic system is the vagus, which supplies the heart, bronchi, cesophagus, stomach, intestine, and pancreas, while the nerves from the sacral portion supply the descending colon, sigmoid, anus, bladder, and genital apparatus. The autonomic is thus also spoken of as the system of the "extended vagus."

These two systems act separately from each other, and may be influenced independently by physiological stimulation and by drugs. Although their actions are antagonistic it is possible that there may exist some as yet undiscovered common centre in the central nervous system which controls the action of these two systems. It is clear that a disturbance of this antagonistic control may cause a stronger or a weaker irritability, or an increased or decreased tonus, in one of the two systems, which may become the basis for the development of a pathological condition. The tone of the sympathetic nervous system proper is maintained by means of an internal secretion elaborated in the adrenal glands and known as adrenalin, and it is possible that the tone of the autonomic system is maintained by some similar analogue, an "autonomin," although such as yet has not been discovered.

The attempt is here made to isolate from the mass of nervous

diseases hitherto grouped under the name of neurasthenia, hysteria, &c., a symptom-complex forming a definite clinical entity, which the authors have designated *vagotonia* and which they regard as a functional *autonomic system disease*, because all its symptoms may be identified with those of a state of stimulation of the "extended vagus." This *vagotonia* may be general, or, if only one part of the system be effected, local. The real etiology must be sought in some disturbance of the internal secretions. It exists most markedly in the young; it is the expression of an inferior constitutional make-up and may bear some relationship to the lymphatic constitution and the status thymicus.

The clinical manifestations associated with, or attributed to, this condition are described in considerable detail, many cases which until now have been described as intestinal neuroses being shown to be identical with *vagotonia*. Treatment must be directed not against *vagotonia* as a constitutional condition, but against those symptoms of irritation in the autonomic system which result from it; and the best antidote for the spastic state is atrophine given in large doses for some time.

The authors, in their closing remarks, state that "we know full well that many of the things which we have stated, stand but on unsteady ground, but, in spite of this, we hope to have given the impetus to further investigations, which may be of great significance for special pathology and therapy."

The translation has been well done, and there is an index.

#### **WISH-FULFILMENT AND SYMBOLISM IN FAIRY TALES.**

(633) Dr FRANZ RICKLIN (of Zurich). Authorised translation by Dr Wm. A. White (of Washington, D.C.). *Nervous and Mental Disease Monograph Series*, No. 21. New York, 1915. Pr. \$1.00.

IN psychiatry and the related sciences there has lately broken out a struggle for and against the Freudian theories, and this book is the outcome of the development of these principles of psychoanalysis which have been brought so prominently before our notice during the past few years. The most important part of this movement has perhaps been the concept of the subconscious. This work on fairy tales shows the ramifications of the subconscious in its preservation of the legends and the folk-tales, the feeling attitudes and the superstitions of the race. Just as the adult carries over from his childhood certain tendencies which manifest themselves through his subconscious mind, so the race does likewise. The psychology of fairy tales stands in close relationship to the world of dreams, of hysteria, and of mental disease. They exhibit the same tendency to wish-fulfilment, and, if interpreted

along their deeper psychological trends, appear in a new, less child-like garb. The interpretation here is entirely Freudian.

The scope of this monograph will be understood from the headings of the six chapters, which are entitled—(1) wish structures and their forms; (2) the wish structure of the fairy tale; (3) symbolism; (4) the symbolism of the fairy tale; (5) transposition upward, infantilism; and (6) some special sexual fairy-tale motives. The literature of fairy tales is vast, and only a few could be taken for this work, but the analyses here presented represent a distinct contribution to our knowledge of comparative psychology, and regard the subject from a point of view which cannot fail to attract interest, and certainly form a further definite addition to Freudian literature.

The translation tends in places to be somewhat too literal, but, apart from this, has been well done.

**THE MENTAL HEALTH OF THE SCHOOL CHILD.** (*The psycho-educational clinic in relation to child welfare. Contributions to a new science of Orthophrenics and Orthosomatics.*) J. E. WALLACE WALLIN, Ph.D. Pp. xiii+463. 1914. Yale University Press, New Haven, U.S.A., and Humphrey Milford, Oxford University Press, London. Pr. \$2.00 net.

DURING the last three or four years the writer has published a number of articles in various journals dealing with the scientific study and the care and improvement of the mental and physical misfits in schools, and he has been induced to republish them here in book form on account of the widespread interest which is rapidly developing in regard to the serious social and educational problems caused by the presence of such large numbers of mentally defective children.

The argument is that practical psychology, if properly used, should prove of the greatest value in the early diagnosis, training, and teaching of backward, feeble-minded, and mentally deficient children. He points out that while the inspection of school children for infectious and contagious disease is now universal, the importance of school medical inspection for physical defects is not yet fully realised, although, from the point of view of the development of the individual, it is the more necessary of the two. The object of setting children apart for a long term of years, and thereby denying them the opportunities of engaging in productive labour, is in order to provide them with such mental and bodily training as will eventually so increase their productive capacity as to ensure increased returns. The expense of this is borne by the State, in the expectation that adequate return will result in

the form of increased physical and mental capacity ; but unless the physical health is properly cared for, the child becomes incapable of utilising the knowledge given at school. The author therefore suggests that there ought to be a special class formed for mentally backward children, so that the progress of the class as a whole might not be hindered by them. There would thus be established a kind of clearing-house to which all such backward children should be sent. They would here be carefully studied by further psychological examination and properly treated, and, if successful, could then be returned to the regular class ; while the remainder, who proved quite incapable of benefiting by any treatment, would be later sent to institutions for the feeble-minded.

A long and interesting chapter discusses the recent applications of the psycho-clinical and psycho-educational movements, and describes in detail what is being done along this line in America. The importance of a "psycho-educational specialist" for the performance of this work is emphasised. There are also important chapters on the functions of the psychological clinic, on the distinctive contribution of the psycho-educational clinic to the school hygiene movement, on human efficiency, on the present status of the Binet-Simon graded tests of intelligence, and on current misconceptions in regard to the functions of Binet testing and of amateur psychological testers. The last chapter presents a scheme for the clinical study of mentally and educationally unusual children.

Every one concerned with mentally defective children in any way will be struck by the practical nature of the suggestions for treatment and education put forward here. They are worthy of careful and serious consideration. The argument is developed logically and clearly, and the promise of the author to give us further volumes on the more systematic treatment of the study and training of mentally unusual children will be looked forward to with much interest.

**INDEX OF 458 POST MORTEMES OF THE INSANE.** Numbers 1181-(635) 1638. **State Hospital for the Insane, Norristown, Pa.** Vol. II. CHAS. J. SWALM and ABRAHAM L. MANN, with an introduction by ALLEN J. SMITH, A.M., M.D. 1915.

IN 1908 the first volume of indexed autopsy abstracts from this institution was published, and was followed each year by abstracts of the autopsies of the interim in the annual hospital reports. These latter are now collected and indexed in the present volume at the direction of the Board of Trustees, and comprise 458 post-mortem examinations performed during the years 1907 to 1915.

The book is divided into three parts, viz.—Part I., General

index of the pathological diagnosis of each post mortem; Part II., cross index; and Part III., index of museum specimens. Part II. is subdivided into four sections: Section 1, clinical types of insanity; section 2, sex of clinical cases; section 3, colour of clinical cases; and section 4, classification of anatomical lesions—(a) brain, spinal cord, and meninges, and (b) general cross index. Special attention has been directed to eliminate different terms for the same type of lesion. The microscopic study of the brain has been confined to only a few specially interesting specimens, and no illustrations are included.

The indexing system is extremely good. The preparation of the volume has involved much work, and it is satisfactory that such a valuable series of post-mortem examinations on the insane should have been placed on record, and not allowed to remain hopelessly buried in the dusty record book of an isolated institution.

**CORNELL UNIVERSITY MEDICAL BULLETIN, 1914, iv., October.**  
(636) **Studies from the Department of Neurology.** Published by  
Cornell University, 477 First Avenue, New York City.

THIS volume consists of a collection of twenty-seven papers issued from the department of neurology during 1912-14, all of which had previously appeared elsewhere. They are divided into six divisions: (a) historical, (b) diagnosis, (c) neuro-physiology and pathology, (d) psycho-pathology and psycho-analysis, (e) neurological economics, and (f) clinical. The last is the largest group and contains twelve papers. The great proportion of the reprints are of much interest, and covering such a wide field of neurology, make the volume of considerable value and importance.

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*The Training School Bulletin*, 1915, xii. November.

# Review of Neurology and Psychiatry

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## Original Articles

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### PELLAGRA—REPORT OF A CASE.

By D. K. HENDERSON, M.D.,

Senior Assistant Physician, Glasgow Royal Mental Hospital ;  
Late Resident Psychiatrist, Johns Hopkins Hospital, Baltimore.

So long ago as 1866 Howden described in the *Journal of Mental Science* a case which apparently was quite characteristic of pellagra. No interest, however, seems to have been aroused in regard to the occurrence of this disease in the British Isles, until in 1909 Brown and Cranston Low reported a second case. Since that time Sambon, Box, Blandy, Hammond, Johnstone, Rainsford, Ross, and several others have reported cases, most of which seem to be undoubtedly true cases of pellagra. The condition, however, is still so rare, and still so little recognised, that it has been thought advisable to record the following case, which, so far as I can find out, is the first one to occur in the West of Scotland.

*C. M.*—Admitted July 15th 1915. Voluntary patient, married, housewife, 50 years.

*Family History.*—Negative for nervous or mental disease for three generations.

*Previous History.*—The patient was born in Glasgow, and as a child is stated to have been quite strong and healthy, and to have developed normally. She had a bright, happy, cheerful disposition, and was not in any way moody. She had a fair education, and married when 17 years old. Her marriage has

always been a very happy one. She has one son and two daughters, who are all well. Eight years after marriage she went to India with her husband, and remained there until 1902, when she returned home. A year or two previous to returning home from India she suffered from a bleeding from the rectum, for which she underwent an operation, but the nature of the operation cannot be definitely ascertained. Just previous to her return home she had a miscarriage. Otherwise, during the whole of her residence in India, she enjoyed good health. While there she ate a certain amount of maize, but never excessively.

She never has been fond of meat, and especially during the last two years she has lived principally on tea and bread and butter. Sometimes during the day she would take a small piece of steak and milk pudding, but more often she would not take any steak. Occasionally she would take a little porridge and potatoes, but bread and butter was her chief article of diet, and in addition she would take from six to ten cups of tea per day. According to her husband, "for two years she has not taken a regular meal." Since her return from India, and up until the onset of her present illness, she had been in good health.

*Onset of Present Illness.*—About two years ago (in July 1913) she did not seem to be quite so well, her appetite was poor, and she complained of headache throughout her head. A feeling of dizziness was usually associated with the headache. About July 1914 she had several attacks of vomiting, but none since that time. During the last year she frequently complained of her tongue being dry and hot, and of soreness in her stomach—"As if it was on fire." About eight weeks previous to admission she started to complain of not seeing so well as formerly, everything appeared dim, but this condition did not progress. For seven or eight weeks previous to admission she had had considerable difficulty in walking, her hands, too, were tremulous, and on account of her general weakness she had to be confined to bed. There was no disorder of bladder or bowels, no smell or taste disorder, and except for slight hesitation, no disorder in speech. There was no history of any unconscious spells. About one month previous to her admission the family noticed that her hands were rough, dry, and cracked, and after a time the skin started to peel off. She herself complained of the condition of her hands, and frequently asked the family physician about them.



Towards the end of June 1915, just about three weeks previous to admission, mental symptoms developed. In being cared for in any way she would become excited, would push every one away from her who wanted to help her, and told every one to leave her. The most of the time she knew where she was, but occasionally her mind would seem to wander, and she would ask where she was, and what house she was in. For the most part she knew the people around her, but on one occasion, when addressing her daughter, she said: "You are not my Dolly." Just two days previous to admission she heard a noise on the street, thought that it was her son shouting, and seemed terrified.

Gradually she got more and more depressed, talked about being a burden, and on two separate occasions was found with a razor and a piece of cord concealed. Her appetite was exceedingly poor, she slept poorly, and frequently complained of her stomach, but there was no history of diarrhoea.

*On admission* (July 15th 1915) to the Glasgow Royal Mental Hospital, she was exceedingly dull and listless, at times became slightly apprehensive and startled, but there was no evidence of any hallucinations. She showed a certain amount of retardation in answering questions, the questions frequently had to be repeated, her answers were spoken in a low voice, and for the most part were monosyllabic, but they were always quite relevant.

As the examination proceeded she became so perturbed and ill-at-ease that it was exceedingly difficult to obtain from her a description of her mood, or of the onset and development of her illness. She denied any feeling of mental confusion, and stated how a few months previously—she could not tell how many—she had suffered from a feeling of giddiness, was unable to eat anything, was unable to control her legs, and in consequence had to be put to bed. At times when her headaches were particularly bad she would not be quite clear as to where she was, or as to the people around her. When asked about attempting to harm herself, she denied any such tendencies, and when questioned about the razor and piece of cord, simply said that she did not remember anything about them. She had an imperfect realisation of time and place, *e.g.*—

Day? "I'm not sure to-day."

What do you think? "Saturday" (Friday).

Month? "June" (July).

Year? "Fourteen" (fifteen).

Place? "I don't know."

Kind of place? "I don't know—it is a sick place."

A hospital? "I'm not sure."

What is my business? "You are a doctor."

In giving an account of her life she mentioned the main facts of her life correctly; but discrepancies occurred in her dates, *e.g.*, at one time she gave her age as 45 years, at another time as 50 years (really 49 years); came home from India when about 30 years old, has now been home for eleven years (really came home when 35 years old, and has now been home for thirteen years); gives the age of both her eldest and second child as 24 years.

Her memory for recent events was also poor, said that she had been in the hospital for one week (really one day), and that her daughter was the only person who came with her (really her son, sister, son-in-law, and daughter). Her power of retention was poor, her grasp on general information and her ability to calculate were quite definitely impaired, but she realised to a certain extent that she was in need of hospital treatment.

*Physically* she was a rather poorly nourished anæmic woman. She showed a thickening and roughening of the skin of both hands, affecting the backs of the hands, and extending round the wrists in the form of bands. The condition was symmetrical on the two sides. Over and round the right elbow there was a marked thickening and discoloration of the skin covering an area about the size of a five shilling piece; the residuals of a similar condition could also be seen on the left elbow. On both knees, on the front of both ankles, on the inner surface of both big toes, and round the genitalia the same condition of thickening and brownish yellow discoloration of the skin was present. An objective examination of the nervous system showed no disorder of any of the cranial nerves. She complained of defective eyesight, but no gross disturbance could be made out. Her pupils were moderately dilated, the left was a shade more dilated than the right, but they were both regular, and reacted promptly to light and on accommodation.

There was no tremor of the facial muscles, but there was a rather fine tremor of the tongue, and a coarse tremor of the outstretched hands. The finger to finger, and finger to nose tests, showed

a slight degree of intention tremor in both hands. There was no gross loss of muscular strength, but she could not walk without assistance, and Romberg's sign was present.

Owing to the patient's dull mental state, a sensory examination was very unsatisfactory; but as far as could be determined, except for slight dulling to pin-pricks, no disorder could be made out. The knee and achilles jerks were markedly and equally exaggerated on the two sides, and a well-sustained ankle clonus was easily elicited on the two sides. The plantar response was flexion on both sides. The arm jerks were all equally exaggerated on the two sides; she had control over her organic reflexes.

The tip and sides of her tongue were red and dry, she complained of thirst and of pain in her stomach, but there were no other gastro-intestinal symptoms.

There was no disorder of the heart, lungs, or genito-urinary organs. The Wassermann reaction was performed at the Glasgow Public Health Laboratory, and was reported negative both with the blood and cerebro-spinal fluid.

*Following Admission.*—For the first few days she continued in a dull, rather apprehensive state, and at nights particularly would give expression to her fears, *e.g.*, "I'm afraid these people are going to do some harm to me—to burn me—I heard some one say, 'Make it very hot'—it was not the patients—it was the other people who were going about—Oh, I am afraid I am going off my head." While making the above remarks she breathed very rapidly, and apparently was quite terrified.

On the night of July 20th she seemed to be disturbed by every sound heard in the ward, stated that there were two coffins on the desk where the nurse was writing, and that there should only have been one, as she (the patient) was the only person who was going to die. She imagined that she heard people coming up the stairs, and that she heard people laughing in the kitchen downstairs, and asked that she be killed at once, as she could not hope to be able to fight against them. On 22nd July she was exceedingly restless, tried constantly to get out of bed, and complained of burning and dryness in her throat, on account of which she drank large quantities of water. She said: "They were 'phoning up and down all day to-day, and the girls have lost their money—£90—they have taken their bed-clothes, table linen, and all their nice things, they have taken everything—Will you speak

about it, doctor? Yes—see (pointing) all the grand things they are spreading out now.” When questioned she admitted feeling mixed up in her head, called the place Maryhill (Gartnavel), and could not be got to give the day, month, or year. At this point she again suddenly interrupted and exclaimed: “Look, doctor (pointing to the ceiling), I cannot see, but I hear them calling where they left the money.”

By this date the skin condition on her hands was beginning to fade.

Since that date a gradual improvement has taken place, so that now (August 21st 1915) she feels in her normal condition. She is bright, happy, contented, and very appreciative. She has also a good realisation of what she has passed through. Her head is clear, she is correctly oriented for time and place, and her memory both for remote and recent events is practically intact. Physically she has gained seven pounds in weight, enjoys an ordinary mixed diet, and has no complaints of burning in her mouth and throat, or of soreness in her stomach. The roughening and thickening of the skin has now almost completely disappeared from the different areas affected. There is not so much inco-ordination of the arms, but her gait is still very unsteady, and her tendon reflexes still remain quite markedly but equally exaggerated on the two sides.

She has been treated with two series of ten intra-muscular injections of sodium cacodylate, by rest in bed, dieting, and passive movements and massage of the extremities.

*Impression.*—The distribution, symmetry, and character of the skin lesions, the dry, red tongue with a history of “sore” stomach, the evidence of spinal cord involvement, *e.g.*, inco-ordination, sign of Romberg, exaggerated tendon reflexes, difficulty in walking, along with a depressed, delirious mental state, constitutes a syndrome quite characteristic of pellagra.

*Comment.*—Such a case as the one reported would seem to confound, as far as the etiology of pellagra is concerned, both (1) the maize theory and (2) the simulum theory of Sambon.

In regard to the maize theory, it has already been stated that while the patient was in India she ate a certain amount of maize, but never excessively, and during the last thirteen years in this country she has not eaten any maize, and furthermore, up until two years ago had been in good health. It can therefore be

definitely stated that the eating of maize has in all probability had nothing at all to do with the causation of this case. In connection with the maize theory it may be well to emphasise the findings of the Thompson-M'Fadden Commission, which has carried out its investigations in Spartanburg County, South Carolina. The observations of the Commission on the use of the more common food-stuffs failed to discover any points of difference between pellagrins and non-pellagrins, or any facts which would seem to explain the strikingly greater prevalence of pellagra among certain classes of the population. *The limited use of fresh meats was the most striking defect in the general dietary.* An investigation of the kind, quantity, and quality of corn and corn products used in the county failed to bring to light any epidemiological evidence pointing to the agency of corn as an etiological factor in the disease. In two cases there was a definite history of no consumption of corn for two years prior to the onset of symptoms, and in several other cases the amount of corn eaten was so small that the Commission felt that the evidence was strongly against the hypothesis that corn products alone were the causative agents of the disease.

On the other hand, Sambon believes that pellagra is the result of an infection by a protozoal parasite transmitted probably by a species of simulium, a biting insect which passes its larval and pupal stages in running water. He has stated that the disease is confined to certain well-defined rural districts, in each of which is a swift-running stream, and that the disease is more prevalent among those living in close proximity to the river than in those residing at some distance from it. He believes that any cases occurring in towns are simply imported.

When our patient returned home from India in 1902 she first of all stayed for one year in a village called Springburn, near Glasgow, then for a period of five years at a place called Cardonal, between Glasgow and Paisley, and for the last seven years she has lived in the city of Glasgow. At no time has she been in close proximity to a swift-running stream.

The points in the case which I would emphasise would be the almost entire absence of meat, and the lack of variety in her dietary, and the improvement which has been effected by an ordinary full mixed diet, and arsenic medication.

My best thanks are due to Dr L. R. Oswald, Physician-

Superintendent of the Glasgow Royal Mental Hospital, for permission to publish this case.

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## Abstracts

### ANATOMY.

#### ON THE RHINENCEPHALON OF *DELPHINUS DELPHIS*.

(637) WILLIAM H. F. ADDISON, *Journ. Comp. Neurol.*, 1915, xxv., Oct., p. 497 (15 figs.).

THE brain of the common dolphin is characterised by the entire absence of the olfactory tracts and bulbs, and hence the dolphin is completely anosmatic. The mesethmoid, which corresponds to the cribriform plate of the ethmoid of the ordinary mammal, is imperforate. In addition the olfactory cortex of the basal surface of the frontal lobe is also wanting, so that the corpus striatum of each side forms the surface as a convex oval area, the *lobule désert* or *désert olfactif* of Broca. The parolfactory cortex is much reduced, though not altogether absent. This is interesting in the light of Edinger's view that the tuber olfactorium is not a part of the olfactory system, but is the end station of fifth nerve fibres from sensory structures in the snout, *i.e.*, "oral sense" fibres.

No connections with the hippocampus could be seen with certainty. The hippocampi were small degenerate structures. True fornix fibres were seen, and the corpora mamillaria, where these fibres end, were greatly reduced in size. The psalterium, formed of crossing fibres between the two hippocampi, was present, but the anterior commissure was quite minute, and probably the olfactory portion was entirely lacking. The septum pellucidum was very thin.

The fact that both nuclei amygdalæ and ganglia habenulæ were present, though reduced, points to their having only a partial connection with the olfactory mechanism. A. NINIAN BRUCE.

**THE CORTICAL CONNEXIONS OF THE RED NUCLEUS.** (Les (638) *connexions corticales du noyau rouge.*) LA SALLE ARCHAMBAULT, *Nouv. Icon. de la Salpêtrière*, 1914, xxvii., May-Aug., p. 188.

ACCORDING to this writer, the red nucleus receives cortical radiations from various regions of the hemisphere, viz., the frontal, operculo-central and temporal areas. The first of these pass by the anterior limb of the internal capsule and the subthalamie region, to reach the anterior segment of the nucleus. The second go by the posterior limb of the internal capsule to the middle segment of the nucleus. The third pass by Wernicke's field to the posterior part of the nucleus.

S. A. K. WILSON.

### PHYSIOLOGY.

**STUDIES ON REGENERATION IN THE SPINAL CORD.—I. An** (639) **analysis of the processes leading to its reunion after it has been completely severed in frog embryos at the state of closed neural folds.** DAVENPORT HOOKER, *Journ. Comp. Neurol.*, 1915, xxv., Oct., p. 469 (8 figs.).

REGENERATIVE processes in the spinal cord severed in the cervical region in frog embryos, at the stage following the closure of the neural folds, will re-establish its anatomical and physiological continuity under favourable circumstances.

When the cut ends are brought into contact with one another, healing *per primam* results. When the wound surfaces are not opposed, reunion and return to nearly normal form and structure are brought about by the following steps: (a) the development of nerve fibres from the motor cells of each segment of the cord, (b) the growth of sensory axones from the cut surface of the posterior stump, (c) the outgrowth of fibres from the epithelial cells of the central canal of either end of the cord, (d) the wandering of neuroblasts into the fibrous net between the cut ends from both stumps of the cord, and (e) the elongation of both ends of the spinal cord toward each other by the proliferation of epithelial cells of the central canal and the consequent lengthening of the canal itself.

The elements entering into the regenerated portion of the spinal cord are derived entirely from the original cord. The surrounding connective tissue plays no rôle in the rehealing process. The epidermis probably takes no part in it. Complete reunion of the cord may be prevented by the interposition of mechanical obstacles to regeneration or by the too great separation of the cut ends. The tadpoles behaved normally as soon as motor

and sensory connections had been established. Multiple central canals were not observed.

As no nerves had developed at the time of operation, no degeneration took place and hence it is doubtful if the term "regenerative" can be applied to the nerve development seen in the embryos under discussion.

A. NINIAN BRUCE.

**THE CARDIO-INHIBITORY CENTRE.** F. R. MILLER and J. T. (640) BOWMAN, *Amer. Journ. Physiol.*, 1915, **xxxix.**, p. 149.

THE authors consider, as the results of experiments upon the dog, that the cardio-inhibitory centre is situated in the dorsal vagus nucleus. This is in harmony with the histological investigations of Kohnstamm, and of van Gehuchten and Molhant (*v. Review*, 1914, **xii.**, p. 107).

A. NINIAN BRUCE.

**THE STIMULATION OF THE HYPOPHYSIS IN DOGS.** ROBERT (641) W. KEETON and FRANK C. BECHT, *Amer. Journ. Physiol.*, 1915, **xxxix.**, p. 109.

ELECTRICAL stimulation of the hypophysis in dogs under insufflation anaesthesia gives rise to an increase in the reducing substances in the blood. Drilling over the sella stimulates the gland mechanically, but not so efficiently as the induced shocks. If the stimulation be applied anteriorly or posteriorly to the gland, with precautions to prevent an escape of the current to the hypophysis, no rise in the reducing substances results. This rise on stimulating the gland does not occur in dogs whose splanchnic nerves have been previously divided, a fact which argues against the liberation of a hormone which increases directly the cellular glycogenesis.

With active diuresis the threshold of glycosuria lies between 0.19 per cent. and 0.21 per cent. reducing power of the blood figured to dextrose. Once established, the sugar in the urine increases in concentration out of proportion to the reducing power of the blood.

A. NINIAN BRUCE.

**THE INFLUENCE OF STIMULATION OF THE DEPRESSOR NERVE UPON SUPRARENAL SECRETION.** A. N. RICHARDS (642) and WILSON G. WOOD, *Amer. Journ. Physiol.*, 1915, **xxxix.**, p. 54.

STIMULATION of the splanchnic nerves electrically, by asphyxia, reflexly by excitation of sensory nerves, or by impulses from higher centres, *e.g.*, fear, rage, &c., is now known to produce an increased



outflow of adrenalin from the suprarenal glands. It is thus regarded as established that secretory fibres are contained in the splanchnic nerves to the suprarenals.

The author here stimulated the depressor nerves to the suprarenals, and found that a diminution in the output of adrenalin resulted. He concludes that the processes which are responsible for the discharge of adrenalin into the blood are subject to reflex inhibition by way of the depressor nerves; in other words, the mechanism of suprarenal secretion is involved not only in pressor but also in depressor reflexes.

A. NINIAN BRUCE.

### **PATHOLOGY.**

**A MIXED TUMOUR (CHONDRO-FIBRO-EPITHELIOMA) OF THE (643) CHOROID PLEXUS.** W. H. BURMEISTER, *Bull. Johns Hopkins Hosp.*, 1915, xxvi, Dec., p. 410 (4 figs.).

THE patient was a negro, aged 60, who was only under observation two hours before death, and during all that time in a semi-comatose condition. He had complained of headaches off and on for six years. Four years ago he had fallen on the street unconscious, and remained bed-ridden for a week. Two days before death he again fell and remained semiconscious till death.

At the autopsy a roughly egg-shaped tumour almost completely filled the distorted right lateral ventricle. The choroid plexus entered directly into the tumour forming a distinct pedicle, which was the only point of attachment of the growth that could be lifted free from the cavity of the ventricle. Its surface was covered by short, delicate papillæ, and the ventricle contained debris, detached necrotic papillæ and blood-clot.

The body of the tumour consisted mostly of islands of typical hyaline cartilage, each island having a definite perichondrium of more compact connective tissue than that of the stroma generally. Irregular necrotic areas were found in the stroma containing small calcareous granules ("brain sand"). The papillæ possessed a multilayered epithelium, the lowest consisting of low columnar epithelium, the upper of a syncytial mass.

The growth was considered to be a teratoma, the mesoblastic cartilaginous elements of which were carried in at the time of the embryonic pushing in of the velum interpositum of the brain, leading in part to the formation of the choroid plexus.

A. NINIAN BRUCE.

**AN ANATOMICAL AND CLINICAL STUDY OF A CASE OF**  
 (644) **INFANTILE SPASTIC RIGIDITY.** (*Studio anatomo-clinico su un caso di rigidità spastica.*) G. BIONDI, *Riv. ital. di Neuropatol., Psichiatr. ed Elettrotet.*, 1915, viii., p. 337.

THE case was a girl of unknown antecedents who died of bronchopneumonia at the age of 14. Clinically she did not differ from an ordinary case of Little's disease with grave arrest of mental development. Anatomical and histological examination showed an absence of gross lesions in the cerebral cortex. There were the remains of an old meningeal inflammation most marked in the region corresponding to the Rolandic area and the frontal lobes. Small lacunar foci were found in the lenticular nucleus and hyperplasia and hypertrophy of the neuroglia round the vessels in the white substance of the spinal cord. The case was remarkable for being an example of infantile spastic rigidity with complete or almost complete integrity of the pyramidal tracts.

J. D. ROLLESTON.

**A STUDY OF NORMAL LOOKING BRAINS IN PSYCHOPATHIC**  
 (645) **SUBJECTS.** E. E. SOUTHARD and M. M. CANAVAN, *Boston Med. and Surg. Journ.*, 1915, clxxii., Jan. 22, p. 124.

*Summary of Conclusions.*—(1) Another search for the relation of mental disease to normal brains. (2) The "normal looking" brains are 1 in 3, 1 in 4, and 1 in 8 in three hospitals. (3) Lesions in normal brains may have little to do with mental disease. Twenty out of 153 promise to be normal. (4) One "normal looking" brain was a general paretic. (5) One case with an exudate. (6) No case found with fine vascular disease. (9) Per cent. is 11.7 per cent. of normal looking brains in 145. (10) Considers atrophy and aplasia. (21) The search is elusive. Microscopic picture in five brains soon to appear. The article gives details of cases and is statistical. Eight references.

WALTER B. SWIFT.

## CLINICAL NEUROLOGY.

**THE SYMPATHETIC NERVOUS SYSTEM AND THE GASTRO-**  
 (646) **ENTERIC FUNCTIONS.** C. S. FISHER, *N.Y. Med. Record*, 1915, lxxvii., pp. 127-134.

THE sympathetic system deserves more study and attention. Possible functional defects antedate organic change in digestive disorders. Therefore the functional nerve side deserves more attention. Yet our present tendencies are pragmatic. Facts of

recent years should swing interest to the functional side. Langley's work important. This paper is a brief presentation to aid routine examination. The whole sympathetic system is divided into (1) sympathetic, increasing activity, and (2) autonomic, diminishing activity. Anatomy of these explained in detail. Functional signs of sympathetic involvement traced. Author urges more attention be paid to this side of the nervous system. Fifty-five references.

WALTER B. SWIFT.

**CONTRIBUTION TO THE SYMPTOMATOLOGY OF THE PERIPHERAL NERVOUS SYSTEM.** (Contribution à la symptomatologie du système nerveux périphérique.) L. BARRAQUER, *Nouv. Icon. de la Salpêtrière*, 1914, xxvii., May-Aug., p. 125 (61 figs.).

THIS is a long article devoted mainly to a consideration of the changes in the peripheral nervous system produced by leprosy, of which the author has had a large experience.

From the sensory standpoint, it is rare in leprosy to find alterations of a typical peripheral or segmental distribution, and much more common to get small irregular spots or areas of anæsthesia or hyperæsthesia, most marked distally, and gradually spreading as the disease progresses. Very frequently the face shows an irregular anæsthesia; curiously enough, the upper face is more usually affected than the lower. A corresponding weakness of the muscles of the upper face is frequently met with, but the correspondence of motor and sensory symptoms is not strict.

The author holds that the morbid process affects the more superficial nerves to begin with, hence not a few cases occur where with complete cutaneous anæsthesia there is conservation of deep sensibility. Eventually, however, all forms of sensibility become impaired. He describes several interesting cases of leprosy invasion of the seventh and eighth cranial nerves, with characteristic labyrinthine disturbances.

The motor and trophic symptoms of leprosy are fully detailed, and the paper is illustrated by a large number of instructive photographs.

S. A. K. WILSON.

**THE SIGNIFICANCE OF ACRO-ATAXIA AND PROXIMO-ATAXIA.** C. F. HOOVER, *Amer. Journ. Med. Sci.*, 1915, cl., Nov., p. 651.

ACRO-ATAXIA is a term used to designate an impairment in the muscular sense of the intrinsic muscles of the hands and feet, in contradistinction from ataxia of the proximal muscles of the upper and lower extremities.

Acro-ataxia without proximo-ataxia is seen only in the primary

anemias with nervous symptoms and peripheral neuritis, *e.g.*, alcohol, lead, diabetes, and diphtheria. Proximo-ataxia without acro-ataxia is seen only in cord disease. This suggests that the nervous affection in primary anæmia begins in the peripheral nerves and ultimately involves the cord. In advanced stages of peripheral nerve and cord diseases, both proximo-ataxia and acro-ataxia may be present.

A. NINIAN BRUCE.

**AN UNDESCRIBED ULNAR NERVE TROUBLE DUE TO TENSION**  
(649) **FROM SCAR, AND ITS CURE.** F. J. COTTON, *Boston Med. and Surg. Journ.*, 1915, clxxii., April 1.

FIXATION of ulnar nerve by scar tissue followed by intermittent tension (produced by elbow motion) at the epitrochlear groove or the inch below it. Result is muscle paresis, sometimes marked atrophy and pain. Numbness may be of diagnostic value. Relief is surgical: dissect out the nerve, carry it forward, and bury it in loose fat and muscle. Seven case reports. A previously unrecognised entity. Cure easy and quick.

WALTER B. SWIFT.

**THE ALCOHOLIC INJECTION OF THE INTERNAL BRANCH OF**  
(650) **THE SUPERIOR LARYNGEAL NERVE.** IRVING SOBOLKY,  
*Boston Med. and Surg. Journ.*, 1915, clxxii., p. 96.

TUBERCULOUS laryngitis is so painful that patients sometimes refuse to eat. Taking of food is rendered comfortable by spraying with 5 per cent. cocain, novocain, or beta-eucaine. Orthoform lasts longer. Pain returns in twenty minutes to two hours. Blocking the internal laryngeal nerve with alcohol injections gives the most permanent relief. Gives anatomy technic. Use 85 per cent. alcohol. Pain does not reappear for ten days to three months. Methofer reports seventeen cases relieved five days to three months. Roth, Hoffman, and Horn report good results. Author reports three cases.

WALTER B. SWIFT.

**PROGRESSIVE NEURO-MUSCULAR ATROPHY.** FLOYD F. HATCH,  
(651) *Boston Med. and Surg. Journ.*, 1915, clxxii., Mar. 18, p. 393.

BRIEF historical review. Reports three cases in one family. Photographs, electrocardiograms, tests of special senses, ophthalmoscopic examination, urine and blood all normal. X-ray examination showed bone atrophy of affected parts, some failure in sesamoid bones, and some failure of epiphysis to unite. Sella turcica normal. Electrical reactions showed degeneration. Partial reaction in unimpaired muscles. Wassermann negative.

A new finding, of a pathological gold chloride reaction and increased albumen and globulin is reported. Reports pathological findings by other men. One of the three cases atypical in having weak pectorals and shows fibrillary twitching. Otherwise all three are typical. Eleven references. WALTER B. SWIFT.

**TWO CASES OF THE CHARCOT-MARIE TYPE OF MUSCULAR**  
(652) **ATROPHY.** (*Deux cas d'atrophie musculaire Charcot-Marie.*)  
A. SOUQUES, *Nouv. Icon. de la Salpêtrière*, 1914, xxvii, May-Aug.,  
p. 175.

THE author describes two typical cases of this condition, belonging to families the details of which have been put on record on several previous occasions (Dejerine, Sainton, Long). S. A. K. WILSON.

**HERPES AND RADICULAR PARALYSIS OF THE UPPER LIMB.**  
(653) (*Zona et paralysie radiculaires du membre supérieur.*) SOUQUES,  
BAUDOUIN, and LAUTUÉJOL, *Nouv. Icon. de la Salpêtrière*, 1914,  
xxvii, May-Aug., p. 251.

THE eruption occupied the distribution of the fifth, sixth, seventh, and eighth cervical roots on the left side, and the first dorsal. The muscles supplied by the corresponding motor roots were more or less paralysed. S. A. K. WILSON.

**COMPENSATORY EXERCISES AS AN AID IN THE TREAT-**  
(654) **MENT OF LOCOMOTOR ATAXIA.** H. M. SWIFT, *Boston Med.*  
*and Surg. Journ.*, 1915, clxxii, pp. 85-90.

SEAT of the disease and explanation of functional inadequacy is first outlined. Analysis of acts in normal standing and walking. Frenkel used the eye in correcting ataxia. Foerster used exercises. Swift shows four abnormalities of the tabetic gait, hyperextension, over-action of leg, lack of plantar flexion to throw body forward and faulty hip position, and offers ways to treat these. Not applicable to all tabetics. WALTER B. SWIFT.

**SENILE PARAPLEGIA.** M. ALLEN STARR, *N.Y. Med. Record*, 1915,  
(655) lxxxvii, Jan. 30, pp. 169-171.

SENILE paraplegia connotes different entities requiring different treatment. Senility is an elastic term. Here it means over sixty-five years. The onset is a gradually growing feebleness, even going to ataxia. Sometimes pain is a marked symptom.

Numbness and cold legs, lost tendon reflexes and subnormal vasomotor condition often present. Lost sphincter control, pain in back, consequent insomnia and discouragement may occur. Hands and arms are free. The distinguishable groups are (1) muscular atrophy, (2) degenerative neuritis, (3) spinal cord disease. This called myelomalacia, a necrosis from imperfect nutrition. Prognosis rather unfavourable, but some markedly improve. Report of three cases. No references.

WALTER B. SWIFT.

**SYRINGOMYELIA, WITH REPORT OF A CASE OF MORVAN'S**  
(656) **TYPE OF THE DISEASE.** VALENTINE WILDMAN, *Med. Record*, 1914, lxxxvi., Oct. 17, p. 672.

THE name, syringomyelia, was first invented by D'Augers Ollivier in 1837. He applied it to any cavity in the cord, whether physiological or pathological. Morvan's disease was originally described as a separate disease in 1883; it is characterised by the appearance of painless whitlows upon the fingers, and is now classified as a variety of syringomyelia.

A case is described in a boy, aged 17 years. At the age of 14 he first noticed he was losing the power of his right hand. This was followed by a flexion contracture, and the muscular atrophy spread from his right hand to his arm and shoulder. A year later his left arm became weak, swollen, and atrophied. He then noticed that the nails of his fingers were brittle, and that ulceration was going on without any pain. These painless whitlows became worse until he lost the distal phalanges of his thumb and of the first and second fingers of his left hand. A similar condition seems to be in process of development on the other hand.

A. NINIAN BRUCK

**PARALYSES FOLLOWING TYPHOID FEVER.** (*Lähmungen nach*  
(657) *Typhus.*) J. ZADEK, *Deutsch. med. Wochenschr.*, 1915, xli., p. 1033.

A REVIEW of the literature and a record of two cases:—

1. A man, aged 28, contracted a severe attack of typhoid fever in June 1914. At the beginning of September the temperature became finally normal. On 29th September, four days after getting up, the left hallux, and to a less extent the whole foot, tended to drop. There was a paralysis of the left extensor hallucis longus, and in a less degree of the tibialis anticus and extensor digitorum longus. The peronei were intact. Galvanic and faradic excitability was much diminished. No RD. There were zones of slight anæsthesia on the dorsum of the left foot. The rest of the nervous system was unaffected. Under

treatment with faradic currents, baths, and massage, gradual improvement took place, and by January 1915 he had sufficiently recovered to join the army.

2. A boy, aged 9 years, in convalescence from typhoid fever, developed right hemiplegia with loss of reflexes and Babinski's sign. Rapid improvement ensued under treatment with electricity, massage, and baths.

J. D. ROLLESTON.

**ON SEPTIC MENINGOCOCCAL INFECTION.** (Ueber septische (658) Meningokokkeninfektion.) A. BITTORF, *Deutsch. med. Wochenschr.*, 1915, xli., p. 1085.

A RECORD of four cases in adults in whom signs of a general infection, viz., septic eruption, pains in the joints, nephritis, endocarditis, splenic enlargement, fever, icterus, &c., preceded meningitis by a period varying from two to eight days. In all but one case in which only one lumbar puncture was performed, meningococci were found in the cerebro-spinal fluid. In one case they were found in the blood also. Three recovered, and one died of paralysis of the respiratory centre. Treatment consisted in repeated lumbar puncture, large doses of salicylic acid, and during the meningeal stage urotropine as well. Serum was not given.

J. D. ROLLESTON.

**PNEUMOCOCCAL MENINGITIS FOLLOWING RHINORRHOEA** (659) **IN A PATIENT SUFFERING FROM HYDROCEPHALUS WITH CEREBRAL ADIPOSITY.** (Meningite pneumococcique consécutive à une hydorrhée nasale chez un malade atteint d'hydrocéphalie avec adiposité cérébrale.) G. MARINESCO and M. A. BOTEZ, *Compt. rend. Soc. de Biol.*, 1915, lxxviii., p. 483.

THE patient was a youth, aged 18, who for the last five years had been suffering from headache, failing vision, and a general and progressive obesity, as well as from weakness of the lower limbs. On admission to hospital optic atrophy was found. Three months later rhinorrhœa from the left nostril developed, resembling cerebro-spinal fluid in physical and chemical appearance. Death took place, preceded by meningitis, after eighteen months' stay in hospital. A pure culture of pneumococci was obtained from the cerebro-spinal fluid. The necropsy showed a well-marked purulent cerebral meningitis. The infection had started in the nasal mucosa, and probably passed up to the brain along the sheaths of the ramifications of the olfactory nerves.

J. D. ROLLESTON.

**MENINGITIS AND CEREBRAL ABSCESS WITH THE JÄGER-  
(660) HEUBNER DIPLOCOCCUS AS CAUSAL AGENT.** (*Méningite  
et abcès cérébral ayant comme agent causal le diplocoque Jäger-  
Heubner.*) A. BOTEZ, *Compt. rend. Soc. de Biol.*, 1915, lxxviii,  
p. 487.

THIS organism has been found alone, or in association with others, chiefly in epidemics of cerebro-spinal meningitis, but it has not been noted before as the causal agent of meningitis secondary to suppurative otitis media.

Botez records a case in which shivering, headache, and cerebral vomiting occurred twelve days after paracentesis of the tympanum. The cerebro-spinal fluid was clear, and contained numerous polymorphs and intra- and extra-cellular diplococci. The same organisms had been previously found in the blood. The necropsy showed an intense purulent meningitis, and an abscess in the right temporal lobe. Sections of the brain showed the same Gram-positive diplococcus.

J. D. ROLLESTON.

**REPORT OF FOUR CASES OF WHAT APPEARED TO BE TUBER-  
(661) CULOUS MENINGITIS, WITH APPARENT PERMANENT  
ARRESTMENT.** CHAS. C. BROWNING, *Med. Record*, 1914, lxxvi,  
Aug. 22, p. 325 (9 figs.).

APPARENTLY about seventy-six cases altogether have been reported as undoubted recoveries, and to this number the author adds four more.

*Case I.*—Girl, aged 4. Both parents died from tuberculosis before she was 1 year old. She had enlarged cervical glands, and all the symptoms of acute meningitis were present for about four weeks. They then gradually subsided, and the patient was lost sight of. She is now aged 29, and is a school teacher.

*Case II.*—A girl, aged 18 years, was operated upon for appendicitis. Both ovaries were also removed at the same time, and a curetting was performed. Evidence of tuberculosis was later reported in the appendix and ovaries. A little over a month later persistent headache with remissions and exacerbations developed, with rigidity of the neck muscles, opisthotonus, convulsions, and loss of consciousness. Removal of spinal fluid was beneficial, and recovery took place ultimately.

*Case III.*—A woman, aged 32, presented the symptoms of acute meningitis terminating in a chronic form. Recovery, or at least arrestment, followed injections of watery extract of tubercle bacilli beginning at .001 mg., and increased gradually up to .01 mg. This was maintained three years later.

*Case IV.*—A girl, aged 2 years 9 months, with enlarged cervical



glands and involvement of both apices, developed external strabismus, double ptosis, and paralysis in all four limbs. Recovery followed the administration of .000001 mg. of watery extracts of tubercle bacilli, and was maintained two years later.

A. NINIAN BRUCE.

**AN APPARENTLY COMPLETE RECOVERY AFTER OPERATION**

(662) **FOR CEREBELLAR TUMOUR.** LANGLEY PORTER, *Archives of Pediat.*, 1915, xxxii., Oct., p. 727.

A SCHOOLGIRL, aged 11 years, gradually developed the following symptoms:—headache, dizziness, and inability to walk straight. This was followed by ravenous appetite, vomiting, ataxia, tendency to fall to the right, lateral and rotary nystagmus with the quick movement to the right, fine tremor of the fingers, choked disc, and chin held towards right shoulder. A tumour of the right cerebellar hemisphere was diagnosed, and the operation was carried out in two stages; in the first stage the cerebellum was exposed, and in the second the dura was opened, and a cyst discovered about 1 cm. inside the right cerebellar lobe, occupying roughly the area normally taken by the nucleus dentatus. It was drained, and complete recovery ultimately resulted.

A. NINIAN BRUCE.

**A CASE OF ACROMEGALY.** (Etude clinique, radiologique et biologique d'un cas d'acromégalie.) CLUZET and LÉVY, *Nouv. Icon. de la Salpêtrière*, 1914, xxvii., May-Aug., p. 226.

In describing a typical case of this disease, the writers note the definite evidence it furnishes of hyperpituitarism of both lobes, and demonstrate the support it gives to the view of Cushing, that glycosuria is associated with pituitary impairment, as opposed to the more recent statements of Camus and Roussy, that the tuber cinereum rather than the gland itself is the area involved. By injecting the cerebro-spinal fluid taken from their case of acromegaly into the veins of a dog, they produced transient glycosuria. They also give a minute investigation of the blood and cerebro-spinal fluid of their case in this paper.

S. A. K. WILSON.

**INTRACRANIAL TELANGIECTASIS: SYMPTOMATOLOGY AND**

(664) **TREATMENT, WITH REPORT OF TWO CASES.** ERNEST SACHS, *Amer. Journ. Med. Sc.*, 1915, cl., Oct., p. 565.

*Case I.*—A boy, aged 10 years, three months after a fall, had fever, and convulsions confined to the left side of the body beginning in the leg. A complete but transitory left-sided paralysis then

developed. After an interval of one year the patient began to have monthly convulsions, beginning in the face, accompanied by irritability, and occasionally headaches and vomiting. His left knee jerk was more active than the right; there was a double sign of Babinski, and normal eye-grounds. On opening the dura a mass of vessels protruded, so that the underlying cortex could not be seen. A month later an attempt was made to remove this angiomatous mass, but the patient died twenty-four hours later. The autopsy showed grossly that the process was confined to the cortex.

*Case II.*—A boy, aged 10 years, who had had his first convulsion when three months old. All convulsions began in the wrist of the left hand. In addition he experienced minor attacks, five or six times during the day, when he would seem sleepy and have a numb feeling in his hand.

There was a weakness of the two lower branches of the left seventh nerve, and a pale telangiectasis over the forehead. The left eye-ground showed an old choroidal atrophy; the right eye was normal. An exploratory craniotomy was performed, and an angiomatous process was found in the dura which was found to have numerous connections with the pial vessels. All the vessels connecting with the pial vessels were ligated, and the dural mass ligated above and below; then the dura was closed. Since the operation, except for one violent attack and three light attacks, the patient has been well.

The author believes that it is essential to distinguish more carefully between a true angioma—a neoplasm—and the process observed in these two cases, which is congenital and not a neoplasm.

D. K. HENDERSON.

**A STUDY OF THE EPILEPSY OF DOSTOJEWSKY.** L. PIERCE (665) CLARK, *Boston Med. and Surg. Journ.*, 1915, clxxii., pp. 46-51.

PREVIOUS study of twenty-five cases, interpreted by Freudian mechanisms, shows the epileptic attack is a libidinous satisfaction. This suggested historical studies. Dostojewsky, the Russian novelist, is the first. He had hallucinations and was epileptic. Describes an attack. It is typical. Church bells heard as aura. The novelist describes several types of epilepsy. Religious ecstasy found here is emphatically noted. His novels elaborate the outcroppings of infantile feelings and ideas found in attacks. Author plans similar analyses of St Paul, Plutarch, Mother Ann Lee, Mohammed and Joseph Smith. Heaven fashioned thus by epileptics will seem less strange to the entire human family.

WALTER B. SWIFT.

**THE VALUE OF EUGENIOS IN HUNTINGTON'S CHOREA.** C. R. (666) M'KINNISS, *Med. Record*, 1914, lxxxvi., July 18, p. 103.

THE author records charts from four families in which this disease occurred, and concludes that it has been generally proven that, to have Huntington's chorea, one or both of the parents, if they live to past middle life, must have been choreic. He also states that he has not seen a single case in which a choreic parent raised a family to adult life but one or more of the children became choreic. In fact the transmission of the disease is so marked that it cannot be too strongly emphasised that marriage of these individuals should be always deprecated.

A. NINIAN BRUCE.

**GANGRENE WITHOUT ORGANIC VASCULAR DISEASE.** LEO (667) BUEGER and ADELE OPPENHEIMER, *Med. Record*, 1914, lxxxvi., Dec. 26, p. 1083.

Two cases are recorded:—

*Case I.*—A man, aged 40, after a prodromal period of attacks of sensory disturbances in the lower extremities, developed paroxysmal, sensory, and vasomotor disturbances. These were followed by dry gangrene, the toes of both feet being affected almost symmetrically. The absence of true ischæmia, of erythromelia, and of any evidence of obliteration of the vessels, excluded the diagnosis of thrombo-angiitis obliterans. The author, accordingly, considered this to be a case of atypical Raynaud's disease, or of so-called "acro-asphyxia."

*Case II.*—A Russian Jew, aged 50, who gave a history of vasomotor phenomena in the upper extremities thirteen years previously, developed about six months before examination similar symptoms in the right lower extremity, and later still paræsthesia, pain, and asphyxia or cyanosis of the left foot. After a period of four months, in which the pain became more and more severe, the cyanosis involving three of the toes deepened, and finally terminated in gangrene. All of the vessels that can ordinarily be palpated were found distinctly pulsating, and at operation proved to be patent at the point of ablation. Examination of the nerves, arteries, and veins of the amputated portions showed no lesion that could in any way be held responsible for the gangrene in either case.

A. NINIAN BRUCE.

**THE OCULAR TROUBLES OF NEURASTHENIA.** T. A. ROSS. (668) *Edinburgh Med. Journ.*, 1915, xv., Aug., p. 121.

NEURASTHENIC asthenopia characterised by discomfort or pain on using the eyes for near work, often followed by tinnitus, vertigo,

nausea and other symptoms, does not depend on fatigue from overuse of the ciliary muscle or from the state of the general health but is a purely mental phenomenon.

It is capable of cure by explanation to the patient of the mechanism which caused it. The causes are one of three: (1) It may be a reaction to emotion. Just as tears are a reaction to the emotion of grief, so discomfort in the eyes may be a reaction to any depressive emotion. (2) It may have originated as above, but after the emotion has passed away it may be kept up by expectation. The patient may have been reading when it first came on, and therefore an association got formed. Thus there may be no immediate history of depression, but one will be got if the case is followed back. (3) It may be due to what Déjerine has termed dys-harmony. Automatic functions are badly performed if the will interferes with their performance. The neurasthenic, not seeing well from inattention, begins to peer, and interferes with the normal automatism of accommodation. This causes discomfort and blurring of the letters.

No patient with astigmatism under 0.5 needs glasses and only occasionally will glasses cure such a case. What does cure is the strong assurance after careful examination that the symptoms will disappear. Thus we find that those patients who are cured by glasses are those who were examined under a cycloplegic and with an astigmometer, *i.e.*, where the patient felt that he had been well examined. Strong assurance coupled with an explanation of the way in which the phenomenon arose will cure every case in a day or two.

AUTHOR'S ABSTRACT.

**FURTHER OBSERVATIONS ON THE TIC NEUROSIS (FOURTH (669) PAPER).** L. PIERCE CLARK, *N.Y. Med. Record*, 1915, lxxxvii, Jan. 30, pp. 171-173.

REVIEWS cases improved and previously reported. Concludes from those that all tics are of psychogenic origin, and need treatment of intensive mental analysis. Case inserted to illustrate that tics are automatic mental riots. A mother attachment keeps the patient infantile. The tic form was patting and caressing; used previously by his mother. Engagement to one who liked his mother, and treatment, have cured him one-half. Three references.

WALTER B. SWIFT.

**PEDAL TIC.** GUSTAV F. BOEHME, *Med. Record*, 1914, lxxxvi, July 25, (670) p. 159.

A CLERK, aged 29, noticed a twitching in his right foot four years previous to examination. It probably grew worse until the

spasms occurred at night in bed, when seated, and even when walking. As no organic signs could be discovered, a psychoanalysis was attempted, and was successful, it being pointed out to him that his foot twitching was merely an exaggeration of a habit he had acquired while sitting on a high stool at the office with his feet dangling down.

A. NINIAN BRUCE.

**FURTHER OBSERVATIONS ON THE TREATMENT OF SCIATICA**  
(671) **BY PERINEURAL INFILTRATION WITH PHYSIOLOGICAL**  
**SALINE SOLUTION.** WM. M. LESZYNSKY, *N.Y. Med. Record*,  
1915, lxxxvii., Feb. 6, pp. 211-213.

REFERS to previous report of 25 cases. Now reports 135 cases more. Average injections are 3 to a patient. Range 1 to 6. A harmless operation relieving pain of sciatica, whether acute or chronic. Often one or two injections give permanent relief. Gives summary of extracts from previous papers. Presents details of technique. Reports 4 cases, one freed from pain 2 years, another 2½ years, one 3½ years, &c. Many rapidly and permanently cured by one injection. In general this method is superior to all other forms of treatment.

WALTER B. SWIFT.

**TREATMENT OF SCIATICA BY EPIDURAL INJECTION OF**  
(672) **SALINE SOLUTION.** ISRAEL STRAUSS, *N.Y. Med. Record*, 1915,  
lxxxvii., Feb. 6, pp. 213-214.

INJECTION through the foramen sacrale superius. Brief anatomical review. Use warm sterile physiological saline solution. Gives details of technique. Acute cases not attempted. Used in subacute and chronic. Nineteen cases treated. The procedure is sometimes an aid to diagnosis. The rationale of the treatment is doubtful.

WALTER B. SWIFT.

**THE "SUGAR" CONTENT OF THE SPINAL FLUID IN MENIN-**  
(673) **GITIS AND OTHER DISEASES.** ARTHUR H. HOPKINS, *Amer.*  
*Journ. Med. Sci.*, 1915, cl., Dec., p. 847.

GLUCOSE is the principal reducing substance in the spinal fluid. Its concentration in health is slightly lower than that of the blood sugar. In meningitis there is the greatest disturbance in this relationship, there being a pronounced hyperglycæmia associated with just as pronounced a drop in the sugar content of the fluid, this drop being due evidently to the destructive activity of the invading micro-organisms. In diabetes the sugar content of the

spinal fluid is almost as high as that of the blood. In infections such as pneumonia there may be a hyperglycæmia without apparent change in the spinal fluid. The reducing substance of the fluid is frequently increased in uræmia, a condition, however, in which hyperglycæmia also occurs. A slight increase in the sugar concentration of both the blood and spinal fluid occurs in some cases of epilepsy, as it does in certain nervous conditions, but the series of thirty-three cases here examined were not sufficient to draw definite conclusions from.

Fehling's test is unreliable and misleading, unless the proper dilutions are constantly used, together with equal parts of the fluid and the solution. In the latter case fairly constant relative results are derived when there is a marked change in the amount of glucose, and when there is not an excess of protein. The micro-method for estimating the reducing substance of the spinal fluid is of value owing to its simplicity, reliability, and the small amount of fluid required.

Quantitative estimations of the glucose concentration of the spinal fluid are of distinct value from the standpoint of very early diagnosis and prognosis, especially in meningitis.

A. NINIAN BRUCE.

**A FURTHER STUDY OF THE DIAGNOSTIC VALUE OF THE  
(674) COLLOIDAL GOLD REACTION, TOGETHER WITH A  
METHOD FOR THE PREPARATION OF THE REAGENT.**

S. R. MILLER, N. D. BRUSH, J. S. HAMMERS, and L. D. FELTON,  
*Bull. Johns Hopkins Hosp.*, 1915, xxvi., Dec., p. 391 (illustr.).

NORMAL spinal fluid produces no changes in suitably standardised solutions of colloidal gold. As colloidal solutions are unusually sensitive, slight reactions possess no diagnostic value. The general reactions observed in tabes and cerebro-spinal syphilis are not in themselves characteristic of either condition. It is probably true that the reactions in cerebral syphilis vary with the type and stage of the disease.

The reaction type observed in cases of general paralysis has been so uniformly present and so characteristic as to warrant the following conclusions: (a) Spinal fluids from *clinical* cases of dementia paralytica cause complete precipitation of colloidal gold in the first 4-8 tubes; (b) the apparent specificity of this paretic reaction is further shown by its occurrence in a number of typical cases in which all other spinal fluid abnormalities were absent; (c) the fact that a paretic curve *occasionally* occurs in patients who show no evidence of dementia in no way argues against the value of this reaction. It may have been made during

a period of remission when the mentality is often high, or the disease may have existed before the symptoms attracted attention; (d) the opinion is therefore advanced that the occurrence of a paretic reaction in a luetic individual should invariably be looked upon as one of grave portent. For, although paresis may not become outspoken, one at least may be reasonably certain that even prolonged and intensive treatment is not apt to modify the underlying disease to any appreciable degree.

The substance or substances in the cerebro-spinal fluid which induce colloidal gold precipitation are, in part at least, dialysable. Fluids from cases of purulent or tuberculous meningitis give reactions which are usually maximal in the higher dilutions. The reactions given by spinal fluids from cases of suspected congenital lues are generally not sufficiently characteristic to warrant a positive diagnosis, except in cases of juvenile paresis.

The colloidal gold reaction does not replace other spinal fluid tests of known value, but in certain instances it seems to possess a sensitiveness and specificity shared by none of the others. Its sources of error are few, its results are decisive, and its performance requires a minimal amount of spinal fluid and a technique of extreme simplicity. The entire value of the reaction is dependent upon the use of a reagent suitably prepared and standardised. The technique for cleaning the glass ware, for securing distilled water, and for the preparation of the colloidal gold are given with great detail.

A. NINIAN BRUCE.

**ON THE VALUE OF THE GOLD SOL TEST (LANGE) IN  
(675) CEREBRO-SPINAL FLUID OBTAINED POST MORTEM.**

H. C. SOLOMON and E. S. WELLES, *Boston Med. and Surg. Journ.*, 1915, clxxii., Mar. 18, pp. 398-402.

*Summary of conclusions :—*

1. Stationary clinical cases give same result ante and post mortem with gold sol test.
2. P. M. fluid from general paralysis cases gives the typical ante-mortem "paretic reaction."
3. Non-inflammatory cases may be negative, but
4. Are positive, in similar ante-mortem cases.
5. Results same as prior to death if bodies are fresh.
6. Gold sol test has same value with fluid from lumbar region ante mortem as post mortem.

WALTER B. SWIFT.

**STUDIES ON THE CEREBRO-SPINAL FLUID AND ITS PATH.**  
 (676) **WAY.—No. IX. Calcareous and osseous deposits in the arachnoidea.** HARVEY CUSHING and LEWIS H. WEED, *Bull. Johns Hopkins Hosp.*, 1915, xxvi., Nov., p. 367 (12 figs.).

CALCAREOUS depositions, in the form of psammoma bodies or *corpora amylacea* of varying stages of development and of varying size, are of common occurrence in the arachnoidea of man and of the lower animals. Associated with this process of calcification there is apt to occur a hyperplasia of the arachnoidal mesothelium. The deposits of lime salts are apparently laid down in cell bodies and in this membrane can bear no relation to the blood vessels.

The occurrence of true bone formation in the arachnoid of man should be regarded as a similar phenomenon, except that one may consider the process of ossification to be proliferative rather than degenerative.

The so-called dural endotheliomas show histologically the same cellular arrangements with calcareous and osseous depositions that are commonly found in the arachnoid, and therefore take their origin in all probability from the mesothelium of this membrane.

A. NINIAN BRUCE.

**SOME OCULAR MANIFESTATIONS OF AURAL DISTURBANCE**  
 (677) **AND THEIR INTERPRETATION.** J. H. HAGEMANN, *N.Y. Med. Record*, 1915, lxxxvii., pp. 100-102.

PRESENT textbooks on relation of eye to ear symptoms are inadequate. *Raison d'être* of ear tests is abstruse. Traces origin, course and distribution of cranial nerves Nos. 3, 4, 5, 6, 7. Ocular evidence of aural pathology shows in three ways: (1) as a reflex; (2) as a transmission; and (3) as the effect of a direct impairment of a nerve in transit.

Pupillary change from ear disease not understood. A child's unequal pupils suggest aural pathology. No references.

WALTER B. SWIFT.

**INTRATHECAL INTRACRANIAL INJECTION OF AUTONEO-**  
 (678) **SALVARSANISED SERUM FOR SYPHILITIC HEADACHE**  
 ALFRED GORDON, *Journ. Amer. Med. Assoc.*, 1915, lrv., Oct. 30, p. 1545.

A MAN, aged 40, who had contracted syphilis at the age of 25, suffered from intense pain in the entire cervical and upper dorsal regions, in the occipital region and over the vertex on the left



side. There was a double primary optic atrophy with a positive Wassermann reaction both in the serum and in the spinal fluid.

Seven injections of neosalvarsanised serum into the spinal subarachnoid space relieved and finally removed the cord symptoms alone but brought no relief to the intracranial manifestations. This points logically to a strict parallelism between this clinical observation and the experimental observation with trypan blue (*v. p. 444*). It is evident that had a good upward flow existed in the cerebro-spinal fluid, the large amount of neosalvarsan injected in the spinal intrathecal space would have carried its spirillicidal effect to the neurones of the cortex cerebri. He was trephined on the chance of the pain being due to localised syphilitic thickening of the skull, but no improvement resulted. He was then given an intracranial injection of neosalvarsanised serum, and the headache gradually subsided. This case strongly suggests that the intracranial route is the only one to be adopted in persistent cerebral manifestations.

A. NINIAN BRUCE.

**THE DURATION OF THE INCUBATION PERIOD OF SYPHILIS, (679) ESPECIALLY FROM THE MEDICO-LEGAL ASPECT.** (*La durée de la période d'incubation de la syphilis envisagée principalement au point de vue médico-légal.*) G. THIBIERGE, *Ann. de dermat. et de syph.*, 1914-15, 5 sér., v., p. 541.

In the great majority of cases the duration of the incubation period of syphilis ranges between 14 and 42 days, but in exceptional cases it may be 50, 60, or even 90 days, so that medical experts may sometimes be unable to offer a rigorously scientific solution of the problems put before them.

J. D. ROLLESTON.

**THE LUTIN REACTION IN THE DIAGNOSIS OF TERTIARY (680) AND LATENT SYPHILIS.** FREDERICK M. HANES, *Amer. Journ. Med. Sci.*, 1915, cl., Nov., p. 703.

As the result of the study of this reaction in 200 medical cases the following conclusions are drawn:—

1. The luetic reaction when positive is absolutely specific.
2. The reaction is of very limited value in other than tertiary syphilis.
3. It is a more delicate test for latent and tertiary syphilis than is the Wassermann reaction.
4. Patients suffering with visceral syphilis give positive luetin reactions with great constancy. This seems especially true of cardio-vascular syphilis.

5. It represents a distinct advance in the diagnosis of syphilis, and is a very helpful supplement to the Wassermann test in the diagnosis of tertiary syphilitic lesions (*cf.* p. 563).

A. NINIAN BRUCE.

**LUETIC ARTHROPATHIES.** WILLIAM H. HIGGINS, *Amer. Journ.* (681) *Med. Sci.*, 1915, cl., Nov., p. 733.

THE author tabulates them as follows:—

Congenital syphilitic lesions	{	Osteochondritis syphilitica.
		Simple synovial effusion.
		Arthropathie deformante.
		Arthralgia.
Secondary syphilitic lesions	{	Acute synovitis.
		Hydrarthrosis.
		Bursopathy of Verneuil.
		Bursopathy of Verneuil.
Late syphilitic lesions	{	Tumeurs blanches syphilitiques.
		Acute or chronic synovitis.
		Gummatous osteo-arthritis.
		Charcot's joint.

A. NINIAN BRUCE.

## PSYCHIATRY.

**RESEARCHES RELATING TO THE PRESENCE OF SPECIFIC PRECIPITINS IN EPILEPSY AND DEMENTIA PRÆCOX.** (682) **PRECIPITINS IN EPILEPSY AND DEMENTIA PRÆCOX.** (*Ricerche sulla presenza di precipitine specifiche nella epilepsia e nella demenza precoce.*) G. PELLACANI, *Riv. di Patol. nerv. e ment.*, 1915, xx., p. 574.

THE writer found that the precipitation method like other biological reactions, such as deviation of the complement, Abderhalden's reaction, and anaphylaxis, did not succeed in demonstrating in the serum of epilepsy or dementia præcox the presence of a specific toxi-albumin such as numerous pathogenic hypotheses suggest.

J. D. ROLLESTON.

**REPORT OF PROGRESS IN MENTAL DISEASES. Part I.** HENRY (683) R. STEDMAN, *Boston Med. and Surg. Journ.*, 1915, clxxii., 6, Feb. 11, pp. 223-226.

KRAEPELIN separates paraphrenia from the dementia præcox group into four types: Paraphrenia Systematica, the expansive type, confabulating form, and Paraphrenia Phantastica. This

separation of types is "based upon absence of affective and volitional deterioration and the progressive course."

Review of Simon's work with the Abderhalden test shows sex gland reaction in nearly all cases of dementia præcox; and also other forms of insanity. The test is exceptional in the functional psychoses. Orton concludes that the reaction occurs in so many diseases that it is still inconclusive, and that as yet no changes in diagnosis are justifiable from the test. Stedman concludes that as yet this reaction gives no light on the causes.

On the colloidal gold reaction (Nonne's) reference is made to Miller and Levy's work where it is compared to other tests. Nonne's reaction is most constant in general paresis. It may be more sensitive an indicator for specific therapy.

Ballet and Genil-Perrin describe a practical scheme for examination of the mental state in dementia. They test affectivity, attention, memory, association of ideas, general activity, and then subdivide these.

Ebbell presents evidence of relation of thymus to dementia præcox. Extracts give no results. Transplantation hopeful, but Klose and Vogt report total absorption from two dogs.

Reflexes in dementia præcox indicate a lesion of higher nerve centres. The presence of Piliz's sign and absence of Leri's reflex are of value.

The review (Part I.) ends with eight conclusions of Lavergne on the relation of general paralysis to pregnancy. Ten references.

WALTER B. SWIFT.

**REPORT OF PROGRESS IN MENTAL DISEASES. Part II.** HENRY (684) R. STEDMAN, *Boston Med. and Surg. Journ.*, 1915, clxxii, Feb. 18, pp. 262-265.

STEDMAN summarises recent literature. Gordon's conclusion of 112 cases of castration in women point to needed reticence in removal of uterus and ovaries, and avoidance of operations on complaint of vague disturbances.

Weygant advises removal at once of nervous patients from battlefields. There is no war psychosis. Yet it fans a predisposition. Cites per cent. of psychoses in different wars. Average is near 2 per cent.

Barrett studies eleven cases of pernicious anæmia with mental disorder. They resemble epilepsy, D.P., mania, asthenia, and paranoia. The majority of these cases had hereditary factors. The histologic changes resemble alcoholism.

Pronger holds slight refractive errors cause neuroses. These should never be ignored in insomnia. Goodall reports some good

results from thyroid treatment but more failures. Raynor advises wet pack for acute delirious mania and insomnia. The wet pack as a method of restraint; also has great value as therapy. Eight references.

WALTER B. SWIFT.

**PARAPHRENIA EROTICA.** M. J. KARPAS, *Amer. Journ. Insan.*, 1915, (685) lxxii, p. 291.

KRAEPELIN has described paraphrenia as a gradually developing progressive disease, characterised essentially by delusions, usually terminating in a state of psychic enfeeblement, but without evidence of disintegration of personality, and striking traits of emotional and volitional deterioration as in dementia præcox. Four types, viz.: (1) Systematised; (2) expansive; (3) confabulatory; (4) fantastic, have been described by Kraepelin, but to these Karpas would add *paraphrenia erotica* to designate a group of cases characterised by hallucinations and delusions of an erotic nature. It occurs in women of middle or past middle life, whose sexual life, as a rule, presents some abnormal traits. The onset is gradual, and the auditory hallucinations of a decidedly sexual undercurrent characterise the disease picture. The condition is differentiated from dementia præcox by the fact that it appears late in life, and the mental deterioration is not of the affective or volitional type.

D. K. HENDERSON.

**THE PSYCHOSES OF THE HIGH IMBECILE.** HENRY J. BERKLEY, (686) *Amer. Journ. Insan.*, 1915, lxxii, p. 305.

THE author believes that the high imbecile is far more prone to develop psychoses than men of higher mental development; that practically all forms of simple and complex mental disorders are to be found among them, though a number are represented in simplified form; that the pernicious action of alcohol in particular, as well as other drugs in less frequency, is much more marked upon them than on normal men, and is, in fact, the corner-stone of a vast majority of the delusions and hallucinations that possess them; finally, that few make a complete recovery from any of the different forms of psychoses, a terminal dementia of quick onset being the rule.

Other points that may be mentioned as characterising the psychoses in the high imbecile are the relatively acute onset and the episodic nature of the attacks.

Sterilisation of the high imbecile is held to be the only solution of the problem.

D. K. HENDERSON.

**A STUDY OF EUGENIC FORCES.** A. J. ROSANOFF, *Amer. Journ.* (687) *Insan.*, 1915, lxxii., Oct., p. 223.

IN this paper the various factors, independent of any consciously eugenic movement, which are instrumental in helping neuropathic individuals to seek help in hospitals for mental cases are fully and thoroughly analysed. A few of the main points of the paper may be briefly mentioned. In the United States in 1880 there were 86.5 institution inmates per 100,000 of the general population; by 1910 the number had risen to 232.0.

The factors which seem to be most important are: (1) Per capita wealth production; (2) percentage of urban population; (3) accessibility of institutions; and (4) intra-mural conditions, as indicated by per capita cost of maintenance in institutions. The opinion is offered that no institution is sufficiently accessible to its population districts which is not within fifty miles of them.

Contrary to the commonly expressed notion, the author believes that forced segregation is far less effective than free or voluntary segregation, and he expresses the opinion that by far the most profitable plan would be to direct the factors mentioned in a more purposeful way, rather than to attempt promoting experimental legislation.

D. K. HENDERSON.

**SOME OF THE MORE RECENT PROBLEMS CONNECTED WITH**  
(688) **THE STATE CARE OF THE INSANE.** JAMES V. MAY, *Amer. Journ. Insan.*, 1915, lxxii., p. 315.

SINCE 1893 the complete supervision by the State (New York) of the care of the insane has been an accomplished fact. The problem now is to adopt measures to reduce the number of admissions to the institutions, and obviate the need of hospital treatment in as many cases as possible. Among the various methods discussed are the following: The importance of disseminating knowledge in regard to the frequency with which alcohol and syphilis cause mental disorders; the establishment of societies for the promotion of mental hygiene; dispensaries and out-patient departments for the care of cases not requiring hospital treatment; the supervision of paroled and discharged cases; the better care of the insane pending commitment; the establishment of psychopathic hospitals and wards in every large centre of population; federal legislation to prevent the immigration of the alien insane.

As an index of the value and excellence of the after-care system, at the present time about 1,400 patients are at their homes on parole from New York State hospitals.

D. K. HENDERSON.

**THE THERAPEUTIC AND ECONOMIC VALUE OF DIVERSIONAL**

(689) **OCCUPATION.** BRITTON D. EVANS and FRANK M. MIKELA, *Amer. Journ. Insan.*, 1915, lxxii., p. 337.

DIVERSIONAL occupation is defined as any form of work which diverts the attention of the patient from his morbid ideas and false sensory perceptions. The chief aim is to restore totally, or in part, the patient's initiative, and, consequently, it is essential to prescribe work which will be both congenial and stimulating. One of the most important prerequisites for the establishment of diversional occupation should comprise a building properly ventilated and illuminated.

A few of the more important industries that have recognised therapeutic value in the treatment of patients are enumerated, and several cases are cited which show exceedingly well the value of well organised occupational work. One must not be discouraged if maybe to start with a certain waste of material takes place, and, indeed, there is a compensation for this loss if the prescription of work takes the place of administering drugs, and, ultimately, the patient may become a producer of articles which have a value greater than the loss of all the material that has been used.

Occupation helps in treatment by reorganising habits of behaviour, by providing a wholesome vent for dynamic energies, by absorbing the attention of the patient in attractive and pleasant pursuits, by promoting closer harmony with the environment and the fellow-patients, and by providing a definite vocational training.

A systematic schedule of hours of work is essential, and the assignment of work should be varied frequently in accordance with the therapeutic indications.

Amusements and play should be introduced in conjunction with diversional occupation.

D. K. HENDERSON.

**THE VALUE OF ROUTINE LABORATORY WORK IN PSYCHI-**

(690) **ATRY.** PAUL G. WESTON and IRA DARLING, *Amer. Journ. Insan.*, 1915, lxxii., p. 325.

THE value of laboratory work, particularly in dealing with cases of syphilis and typhoid fever, is dwelt on, and the presence of a laboratory and a pathologist in every institution is advocated.

D. K. HENDERSON.

**ON BOOKS AND READING.** EDITH KATHLEEN JONES, *Amer. Journ.* (691) *Insan.*, 1915, lxxxii., p. 297.

ANYONE who has worked in a hospital for the treatment of mental disorders knows full well how important it is to try to occupy and interest the patients. This short paper advocates giving lectures to nurses on books and reading, so that the nurses may be got to cultivate a love for books, and that being so, they will then keep the wards supplied with books, and no doubt will take pride in selecting suitable books for their patients. In 1913 the plan advocated was put into force at the M'Lean Hospital, Boston, and excellent results have been effected. D. K. HENDERSON.

**THE STERILISATION OF MENTAL DEFECTIVES CONSIDERED** (692) **FROM THE PHYSIOLOGICAL STANDPOINT.** AMOS W. PETERS, *Med. Record*, 1914, lxxxvi., Aug. 29, p. 370.

By castration the subject is deprived of the internal secretion of the sexual glands as well as the power of procreation. It is doubtful, however, if a normal mentality and a normal nervous system can be developed or maintained without the adequate functioning of the system of glands of internal secretion. The author proposes that effective sterilisation may be produced by Roentgen ray treatment, as this method seems to cause the smallest possible amount of physiological destruction. A. NINIAN BRUCE.

## TREATMENT.

**SOME NERVOUS AFFECTIONS IN WHICH MASSAGE SERVES MORE FREQUENT USE.** J. W. COURTENEY, *Boston Med. and Surg. Journ.*, 1915, clxxii., April 1, pp. 483-486.

MASSAGE should be more frequently employed in the treatment of myospasms, wry-neck, and writer's cramp, cerebral contusion, lateral column disease, infantile paralysis—much benefit results. No marked improvement results when massage is used in progressive muscular atrophy. In tabes with re-education it serves a useful purpose. Mild massage allays some symptoms in paralysis agitans. Also recommended in hysteria and neurasthenia.

WALTER B. SWIFT.

## Reviews

**PHARMACOLOGY, CLINICAL AND EXPERIMENTAL.** A ground-  
(694) **work of medical treatment, being a text-book for students and physicians.** HANS H. MEYER and R. GOTTLIEB. Authorised translation into English by John Taylor Halsey, M.D. Pp. xii. + 604, with 65 text illustrations, 7 in colour. J. B. Lippincott Company, Philadelphia and London. Price 25s. net.

AMONG the most satisfactory advances in clinical medicine and in neurology during recent years has been the gradual lessening of the gap which existed between the clinical worker at the bedside and the scientific investigator in the laboratory. Each previously tended to pursue his own line of work oblivious of the other. During recent years, however, these two lines of research have gradually approached one another. Mingazzini has given us a "clinical anatomy" of the nervous system (*v. Review*, p. 242). Important results have been obtained in "clinical physiology" by S. A. K. Wilson on the mechanism of involuntary movements (*v. Review*, 1913, xi., p. 167), and in "clinical pathology" we have the epoch-making work of J. S. Bolton on the cerebral cortex (*v. Review*, 1914, xii., p. 465). Here we have a "clinical pharmacology," *i.e.*, a work in which the pharmacological and therapeutic actions of drugs are explained side by side, and where it is possible to realise and understand exactly how a certain pharmacological reaction may be utilised to combat a definite diseased process.

The plan which the authors have adopted has been to take up a certain definite system and discuss its pharmacology in detail, *e.g.*, the nervous system is divided into four chapters, namely—the pharmacology of (a) the motor nerve-endings, (b) the central nervous system, (c) the sensory nerve-endings, and (d) the vegetative nervous system. The drug itself is first described, its pharmacological action on various groups of animals is stated, the theories of its action are discussed, its toxicology is explained, and finally its actual and possible therapeutic applications are put forward. We know of no book where the action of the morphine group is more clearly expressed. Some of the most interesting pages, however, are devoted to an explanation of the Meyer-Overton theory of narcosis. This theory was arrived at independently by Hans Meyer and by Overton, who had been separately engaged in trying to discover the mechanism by which chloroform, ether, and other narcotics of the aliphatic series exerted their characteristic action on the nervous system. They pointed out that all such narcotics possessed the physical



property of being soluble in both water and fats. They must be soluble to some extent in water to be absorbed into the blood, and they produce their effects on the central nervous system because they go into solution in the fat-like constituents (lipoids) of nervous tissues, and form a physico-chemical combination with them. The nervous system is particularly rich in such lipid matter, and thus the "solution affinity" of the narcotics for the lipoids of the nervous system is more marked than for any other system. This "solution reaction" between the narcotics and the nerve lipoids is thus the essential cause of the narcotic action, and as the action is a reversible one, restoration of function takes place after the narcotics have been eliminated from the blood, the whole process being entirely comparable to the chemical solution and extraction of a substance which is soluble in different degrees in two media which are not miscible with each other. Many proofs are here advanced in support of this theory, which offers a vast field for further research.

Then the action of bromides presents many points of interest. When taken regularly they replace the chlorides in the tissues, and if this replacement be too great, toxic symptoms appear. To obtain a rapid bromide action, sodium chloride should thus be diminished, and similarly the administration of common salt is curative for bromism, as it replaces the bromides in the tissues and body fluids by chlorides.

The full significance of the functional antagonism between the dorsal sympathetic and the mid-brain—medulla—sacral parasympathetic systems was first clearly demonstrated in the diagram accompanying the chapter on the vegetative nervous system.

There then follow chapters upon the pharmacology of the eye, of digestion, of the reproductive organs, of the circulation, of the respiratory system, of the renal function, of sweat secretion, of metabolism, of the muscles, of the blood, of heat regulation, and of inflammation, and the book closes with two chapters, the first upon etiotropic agents (*i.e.*, those acting on the causative agents of disease), and the last upon factors influencing pharmacological reactions. References to literature are given for every statement.

It is necessarily futile to demand from pharmacological experiments alone upon normal animals a prediction of the action of a drug upon a definite pathological condition in man. But for those who have to administer drugs in disease, a clear understanding of the mechanism of their pharmacological action is required in order that they may be employed properly and to the best advantage, and with this aim a careful study of this volume is to be strongly and seriously recommended.

The book itself tends to be somewhat heavy, and the translator has chosen to insert in brackets his own views on many subjects,

a thing which we personally deprecate in a translation, but apart from these points we have no hesitation in stating that we consider it one of the most important books on clinical pharmacology which have yet been published.

**THE INDIVIDUAL DELINQUENT. A text-book of diagnosis and prognosis for all concerned in understanding offenders.** (695) **WILLIAM HEALY, A.B., M.D.,** Director of the Psychopathic Institute, Juvenile Court, Chicago; Associate Professor, Mental and Nervous Diseases, Chicago Polyclinic. Pp. xvii. + 830, with 10 plates. William Heinemann, London. 1915. Price 21s. net.

THIS large volume of over 800 pages is undoubtedly one of the most valuable contributions to the study of criminals which has yet appeared. It ought to be read and re-read by all persons who are brought into contact with delinquents, whether "judges, lawyers, institutional authorities or psychologists, physicians, religious leaders, school people, and, not least of all, parents." It consists of a report of work done in the Juvenile Psychopathic Institute of Chicago, of which Dr Healy is director. Through the generosity of Mrs W. F. Dummer, this institute was endowed for a period of five years, and at the end of that time the judicial authorities were so impressed by the results that it was given official status, and made a department of the Juvenile Court of Cook County, with a State grant for maintenance.

The literature of criminology up till now has been singularly disappointing. It has tended to classify criminals according to fixed types, it has recognised a born criminal class (a criminal sub-species of man, as it were), it is full of wild speculations and dogmatic assertions, and has regarded the criminal as an under-sized man, or an atavistic phenomenon, or a product of economic conditions. As Dr Healy so strongly emphasises, "there is astonishingly little in the literature of criminology which is directly helpful to those who have to deal practically with offenders." Statistics of seasons, races, head-measurements, alcoholism, etc., mean almost nothing for the fundamental understanding of each individual case; and those who speak so glibly of the criminal as a born type have not the means of investigating whether he was not rather a born defective, and a criminal through accident of environment.

The attitude of Dr Healy is that it is absolutely essential to make a separate study of each individual case, and the views here presented are based upon such a study of 1,000 cases, which have been approached with the aim of discovering, not the cause of criminality in general, but of the criminality of each particular case. In this he has been remarkably successful, and the reader

cannot but be impressed by the open mind and absence of prejudice shown. The subject has been approached with no theory to support, and with no preconceived views, but simply with a desire to discover the truth. The most important part is the study of beginnings. The delinquent's character is the result of a long-continued process of growth; delinquency and abnormality are not synonymous terms. Literature offers almost nothing in the way of studies of delinquents which meet the requirements of recently developed science. The only course was "to devote years of hard work to winning the facts while serving in the field, and meanwhile the method and tools of study had, many of them, to be developed." By reason of their number, and the seriousness of their offences, repeated offenders (recidivists), have the greatest significance for society. Practically all confirmed criminals begin their careers in childhood, or early youth. The determinents of delinquent careers are thus the conditions of youth, when causative factors stand out much more clearly than they do later. It is therefore important to obtain a knowledge of the developmental conditions, family traits, early characteristics, and environment of each individual offender. The best therapeutic effects are obtained from working with youth before the reserve and self-containment characteristic of the adult has established itself, and prolonged and intimate study of young offenders is the most satisfactory method of obtaining a better understanding of the types and possible social adjustments of older delinquents.

The book is divided into two parts. The first and smaller section defines the author's point of view, and explains his methods of examination and classification of findings. A schedule of data is given at some length, so that others wishing to take up such work may obtain the necessary practical material for a start. The second, and by far the larger portion, describes these methods at work in one thousand cases of juvenile recidivists. These case reports and the deductions from them show clearly the immense value of such work, and emphasise the broad-minded attitude taken up by the author. They show clearly the wide variety of causes which are at work, and that these cases are too numerous, too intricately interwoven, and too complicated to fit into hard and fast systems. The study is first and always that of the individual, as it is only through such means that the complexities of mental life and its activities can be unravelled and understood. The methods of investigation are largely psychoanalytical, and it is interesting to note that in such young individuals healthy readjustments usually resulted without such extensive analyses as long-standing neuroses require.

The prime predisposing condition for delinquency is defective heredity, which results not only in defectiveness in the child, but

in defectiveness in the parents and in the home life. The most important antecedent conditions are alcoholism and the broken-up home, then come poor parental control, bad companions, and lack of healthy mental interests. The offender himself may be mentally normal or defective, but in many cases the ability was above the average.

With regard to treatment, the most important conclusions are that good results can only be obtained by the thorough understanding of each individual case, and as the causes at work are so various so also must be the methods of treatment. Whether the tendency here has been to lay too much stress upon the individual is a question which further work will have to solve, but it should be noted here that while Dr Healy has no hesitation in insisting on the necessity of punishment, he insists also that the punishment should not harm the offender, as in practice it so often does.

**THE SCIATICS AND THEIR TREATMENT** (*Les Sciatiques : leurs* (696) *Traitements*). L. LORTET-JACOB and G. SABARÉANU. 2nd Edition. Pp. 238, with 20 figures. Masson et Cie, Paris. 1913.

THE appearance of the first edition of the work having almost coincided with the death of M. Sabaréanu, the second edition is entirely the work of M. Lortet-Jacob. It presents a most complete study of the subject. It appears that sciatica was first mentioned in the literature as a clinical entity by Cotugno in 1764.

The anatomy of the sciatic nerve is briefly described, followed by a short description of the pathological changes which may be found. Sciatica is most common between the ages of thirty and fifty, and affects males more than females in about the proportions of 5 to 3. It results from a very large variety of causes, which are described in turn. The symptoms are discussed in some detail, together with the different physical signs and methods of examination, attention, among other points, being directed to the sign of Lasègue, the degrees of muscular atrophy, the reflexes, trophic changes, and especially to the sensory disturbances, which are illustrated by several figures.

Two anatomo-clinical types are to be distinguished, depending on the involvement of the roots or the nerve trunk, the latter being capable of sub-division into a neuralgia and a neuritis. Complications are rare. Differential diagnosis is then discussed, followed by a valuable chapter on treatment, which is considered under the headings of (a) treatment of the cause, *e.g.*, syphilis, etc., (b) internal medication, and (c) external applications, to the skin, hypodermic injections and intraspinal injections. Numerous prescriptions are given.

**CLINICAL STUDIES ON SUPRARENAL INSUFFICIENCY**  
(697) (*Etudes cliniques sur l'insuffisance surrénale, 1898-1914*). EMILE  
SERGENT. Pp. 498. A. Maloine, Paris. 1914.

THE wide significance of suprarenal insufficiency in clinical medicine is being gradually recognised. Formerly Addison's disease, usually the result of destruction of these glands by tubercle, was the only disease associated with these two small organs, but the increase in our knowledge of the function of the suprarenal glands and of their internal secretion renders it now certain that Addison's disease is merely the most chronic of a large series of types of suprarenal insufficiency. The suprarenal glands, like all other secreting glands, are liable to exhaustion if too great a strain be imposed upon them, but the fact that a continuous secretion of adrenalin is a vital necessity for life, renders even a temporary exhaustion, if severe, of extreme danger to life.

Among the clinical symptoms by which Addison's disease is recognised, one of the most important is the pigmentation of the skin. Such pigmentation, however, takes some time to develop, and consequently in the more acute types of the disease is not found. The extreme asthenia shown by such patients is apt to be overlooked as of suprarenal origin, and attributed to other causes. The author of this study on suprarenal inadequacy came into contact with such an acute case, where death took place after only a very short illness, and where, at the autopsy, complete caseous destruction of both suprarenal glands was found. The difficulty in diagnosing the condition in the absence of any signs of pigmentation of the skin was thus brought prominently before his notice, and induced him to make a closer study of the different conditions in which suprarenal inadequacy may supervene. The result has been the recognition of the fact that different stages of acute, subacute, and chronic suprarenal inadequacy are relatively very common, and occur in a far greater variety of diseases than had previously been recognised.

He has collected his work along these lines in the present book, which he has divided into four parts: The *first part* deals with the determination of the position which suprarenal insufficiency occupies in the pathology of the suprarenal glands. The *second part* takes up the clinical characteristics of suprarenal inadequacy and the methods which permit it to be accurately diagnosed. The *third part* is concerned with the etiology and rôle of suprarenal insufficiency in pathology, while the *fourth part* discusses the practical applications and therapeutic considerations of treatment in such cases.

There is much in this book which is not new, the work included

is not very extensive, but the subject is an increasingly important one, and it is useful to have the contributions of one particular author collected together in this form.

**FATIGUE.** A. Mosso, Professor of Physiology in University of Turin. (698) Translated by Margaret Drummond, M.A., and Professor W. S. Drummond. Pp. xiv + 334. George Allen & Unwin, Ltd., London, 1915. Price 2s. 6d. net.

THE appearance of a less expensive edition of the English translation of Professor Mosso's well-known monograph upon "Fatigue" is most welcome, as it is an example of a semi-popular scientific work in which physiological problems are explained in such a lucid manner that no one can fail to understand the principles of a subject which is of essential importance to all those who are concerned with the well-being or education of their fellows. Professor Mosso has a most charming style, which has not lost in translation. He treats the subject from a broad point of view, commencing with the problem of fatigue in the migration of birds over the sea and in the migration of Piedmontese workmen across the Pass of the great St Bernard. The life histories of some of the earlier pioneers in our knowledge of this subject is then sketched, followed by chapters upon the general and special characteristics of fatigue, on muscular contracture and rigidity, on intellectual fatigue, on the effects of lectures and examinations, on methods of intellectual work, and on over-pressure, etc. The special interest in the book, however, is the practical nature of its contents, and the numerous examples of personal experiences interspersed through the different chapters. The chapter on lectures and examinations is most instructive, and should be read by all teachers. It is, however, not necessary for us to refer at greater length to a book which is already so well known. No one interested could possibly read it without profit to themselves and to others, or without obtaining a new understanding of many of the fundamental principles of conduct and teaching.

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"En marge d'une revue allemande."

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